

# Clear Creek State Forest Resource Management Plan

Department of Conservation and Natural Resources

Bureau of Forestry

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**pennsylvania**  
DEPARTMENT OF CONSERVATION  
AND NATURAL RESOURCES  
BUREAU OF FORESTRY



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## Table of Contents

|   |     |
|---|-----|
| Preface .....   | 2   |
| Executive Summary .....   | 3   |
| District Priority Goals .....                                   | 7   |
| District Overview .....   | 9   |
| 1) Location and Description .....                               | 9   |
| 2) District Organization and Human Resources .....              | 11  |
| 3) Historical Land Use and Disturbance .....                    | 12  |
| 4) Acquisitions History .....                                   | 15  |
| 5) Cultural & Historic Resources .....                          | 17  |
| 6) Ecoregion, Physiography, and Land Cover .....                | 18  |
| 7) Vegetation Communities and Native Flora .....                | 23  |
| 8) Forest Health .....  | 25  |
| 9) Timber Management and Forest Regeneration .....              | 27  |
| 10) Wildlife .....  | 28  |
| 11) Water.....  | 33  |
| a) Major Watersheds.....  | 33  |
| b) Major Municipal Supplies .....                               | 34  |
| c) Fish and Boat Commission Stream Habitat Prioritization ..... | 34  |
| d) Acid Mine Drainage .....                                     | 35  |
| e) River Islands.....   | 35  |
| 12) Oil, Gas, & Mineral Resources.....                          | 35  |
| 13) Wildland Fire .....   | 37  |
| a) Wildfire Suppression.....                                    | 37  |
| b) Prescribed Fire .....  | 37  |
| 14) Infrastructure and Maintenance.....                         | 38  |
| 15) Special Designations .....                                  | 40  |
| a) Conservation Landscapes.....                                 | 40  |
| b) Wild and Natural Areas.....                                  | 43  |
| c) High Conservation Value Forests .....                        | 43  |
| d) Core Forest Index.....                                       | 45  |
| e) Wild Plant Sanctuaries .....                                 | 47  |
| 16) Ownership and Population Centers.....                       | 47  |
| 17) Economy and Forest Products .....                           | 51  |
| 18) Recreation .....  | 53  |
| 19) Communication, Education, and Interpretation .....          | 57  |
| LMU Plans .....   | 59  |
| Glossary of Terms & Acronyms .....                              | 85  |
| Appendices.....   | 100 |
| Appendix 1-Interpretative plan.....                             | 100 |

**Data Note:** Unless otherwise noted in text or caption, all data summarized in this document were compiled between February 2017 and March 2018.

## Preface

The state forest system of Pennsylvania, approximately 2.2 million acres of forest land, comprise 13 percent of the forested area in the commonwealth. The Bureau of Forestry is the steward of this land, and part of the bureau's mission is to manage state forests under sound ecosystem management, to retain their wild character and maintain biological diversity while providing pure water, opportunities for low-density recreation, habitats for forest plants and animals, sustained yields of quality timber, and environmentally sound utilization of mineral resources. Article 1, Section 27 of the Pennsylvania Constitution provides that, "Pennsylvania's public natural resources are the common property of all the people, including generations yet to come," and it sets forth that the Commonwealth has trustee responsibility for these resources. The bureau carries out this constitutional mandate by implementing it in both its long-term planning and every-day actions. To carry out its stewardship and trustee responsibilities for state forest lands, the bureau develops and implements planning documents that assure that the overarching goal of state forest management – ensuring sustainability – is achieved for the benefit of all the people. In 2016, the bureau revised its State Forest Resource Management Plan (SFRMP), which is the primary instrument that the bureau uses to plan, coordinate, and communicate its management of the state forest system. The SFRMP sets forth broad policies, as well as more focused goals and objectives about state forest resources and values, to ensure that the overarching goal of state forest management – ensuring sustainability – is achieved.

State forest management is a coordinated effort involving central office program areas and field staff in 20 forest districts located throughout Pennsylvania. Each district is responsible for managing wildland fire, destructive insects, and disease on all lands throughout the district – public and private. The district staff promote wild plant conservation and private forest land conservation and stewardship. The staff also provide for the protection, administration, and management of state forest lands within the district.

Building upon the 2016 state-wide SFRMP, the bureau has developed District State Forest Resource Management Plans to provide district-level resource information and district- and landscape-level management priorities. This Clear Creek State Forest Resource Management Plan provides an overview of the district and its operations on state forest land and sets forth a framework for future management of Clear Creek State Forest. The planning horizon for this District SFRMP is approximately 5-10 years, after which time it will be revised to reflect changing conditions and priorities.

The bureau also creates District Activity Plans that describe the management activities the bureau will take within each district that may affect the public's use of state forest land. These are implementation plans that address how goals and objectives in the SFRMP and District SFRMPs are being achieved. The District Activity Plans are written at the start of each calendar year and revised mid-way through the year. They are posted on District webpages so that the public may review and comment upon them.

This Clear Creek SFRMP is comprised of a District Overview, a listing of District Priority Goals, and a collection of landscape management unit (LMU) plans, which are described further below.

## Executive Summary

The Clear Creek State Forest Resource Management Plan provides an overview of the district and its operations on state forest land and sets forth priorities for future management of Clear Creek State Forest within the broad framework of the 2016 statewide State Forest Resource Management Plan (SFRMP). The statewide SFRMP is the primary instrument that the Bureau of Forestry uses to plan, coordinate, and communicate its management of the entire state forest system. This District-level SFRMP for Clear Creek State Forest focuses on local resources, opportunities, and areas of emphasis for management. The planning horizon for this District SFRMP is approximately 5-10 years, after which time it will be revised to reflect changing conditions and priorities.

The Clear Creek State Forest consists of 16,526 acres of state forest lands and 4 Landscape Management Units (described below and on page 61), some of which may span boundaries with neighboring state forest districts. The Clear Creek Forest District consists of Mercer, Lawrence, Beaver, Butler, Jefferson, Armstrong, Clarion, and ½ of Venango Counties in the western part of Pennsylvania, mostly in the Pittsburgh Low Plateau and the High Plateau ecoregion. Landforms, geology, and totality of ecosystem factors have made this forest district notable for: high quality northern red oak timber production, natural gas and oil exploration, the Clarion and Allegheny Rivers, and agricultural development. Generally, soils and growing conditions on state forest lands here are of good quality in terms that impact biomass production.

Major historic impacts to the forests here have included: deforestation, uncontrolled wildfires, coal exploration, various introduced pests and diseases, gas and oil exploration, and iron ore extraction.

Currently, most of the forest in this district is of uniform age class and structure because of widespread deforestation in the past followed by a lack of periodic disturbance. For many reasons, this uniformity places limitations on the forest's ability to regenerate optimally and provide the best benefit for multiple ecosystem factors, including human values. Additionally, the forest is under continuous threat from damaging plants, animals, and diseases, and the forest's role amidst a dynamic set of social circumstances is continuously evolving.

As part of a public trust, the Clear Creek Forest District is charged with ensuring the long-term health, viability, and productivity of the commonwealth's forests and conserving native wild plants. The overarching management goal on Clear Creek State Forest lands is to implement practices that enhance the sustainability of multiple ecosystem factors, including economic, environmental, and social dimensions.

Currently, most of the forest communities here are of the Dry Oak-Heath and Red Oak-Mixed Hardwood plant communities. The district manages for the maintenance and regeneration of these communities through routine silvicultural practices and overall forest health promotion.

This district's average annual timber harvest goal is 164 acres. This goal is part of a long-term, systematic plan to provide benefit for the ecosystem and to bring a continuous supply of high-quality timber to Pennsylvania's economy. Prescribed fires, invasive species treatments, deer exclosures, and other techniques are also important land management tools in this district.

Additionally, the Bureau of Forestry is the jurisdictional agency for the conservation of native wild plants, and this district bears custodial responsibility for managing some outstanding communities and/or ecosystems, including: Allegheny River plant communities; as well as some specific plant populations of special concern.

Also, many wildlife species utilize the forest communities this district manages. By managing multiple forest communities for a diversity of age classes, the district routinely provides a suite of habitat factors that benefits a broad diversity of wildlife. However, the district may implement special management that targets specific wildlife because of some custodial responsibility, a mandated protection status, a wildlife's identity in the State Wildlife Action Plan, or the wildlife's recreational/ cultural value to people. This district practices targeted management for woodcock, eastern massasauga rattlesnake, and brook trout.

Recreation is a major forest use on the state forest system and in this district. The State Forest's small land base limits recreation potential to mostly day hikes, but still allows most users ample opportunities to interact with native ecosystems. Much of Clear Creek State Forest is encompassed within the PA Wilds CLI. Popular recreational uses of this state forest include: car camping, mountain bike riding, horseback riding, wild trout fishing, deer hunting, bird hunting and hiking.

Additionally, the district seeks to couple some recreation opportunities with education and interpretation. This district manages multiple educational features, including: RMC, interpretive trail, wayside exhibits, trailhead kiosks, forest demonstration site, and ecosystem management tours.

To facilitate land management objectives and meet public use demands, the district manages an array of infrastructure, including but not limited to: 21 miles of public use roads, 49 miles of administrative roads, and a list of parking lots, bridges, culverts, trails, etc. The district has one maintenance divisions that serve as base for work crews and equipment. Due to universal weathering, infrastructure is always in various stages of disrepair, so maintenance is an ongoing and important operation.

District-wide priority management goals are the following (which are not in priority order):

### **Cultural Resources**

The Clear Creek State Forest has a long history of resource utilization and conservation. Examples of this include logging camps, an oil pumping station, and the Bullion Iron Furnace. Our goal is to preserve and interpret these features.

### **Communications**

We want to engage, create awareness and connect the community to the Clear Creek State Forest. Some individuals do not always know that they are on State Forest Land or the importance that the State Forest System provides. Our goal is to create more waysides within the State Forest; as well as marketing the State Forest regionally through local business and media outlets.

## **Wildland Fire**

Ensure staff and cooperators are well trained and prepared for wildfire through training. We use prescribed fire to help gain or enhance regeneration in our forested stands. Our goal is to continue this practice while researching the most effective and efficient use of prescribed fire.

## **Recreation**

The current trail system on the Clear Creek State Forest functions well but many of the trails have areas that can be improved to allow for a better experience and require lower maintenance. Our goal is to assess the current trail system and look for areas of improvement or areas where we need more or possibly less trails to increase the quality of the experience. Connecting the local heritage and the community to the recreational opportunities on Clear State Forest is very important. Our goal is to effectively communicate all the recreational opportunities available on the State Forest and build and foster local and regional relationships.

## **Forest Health**

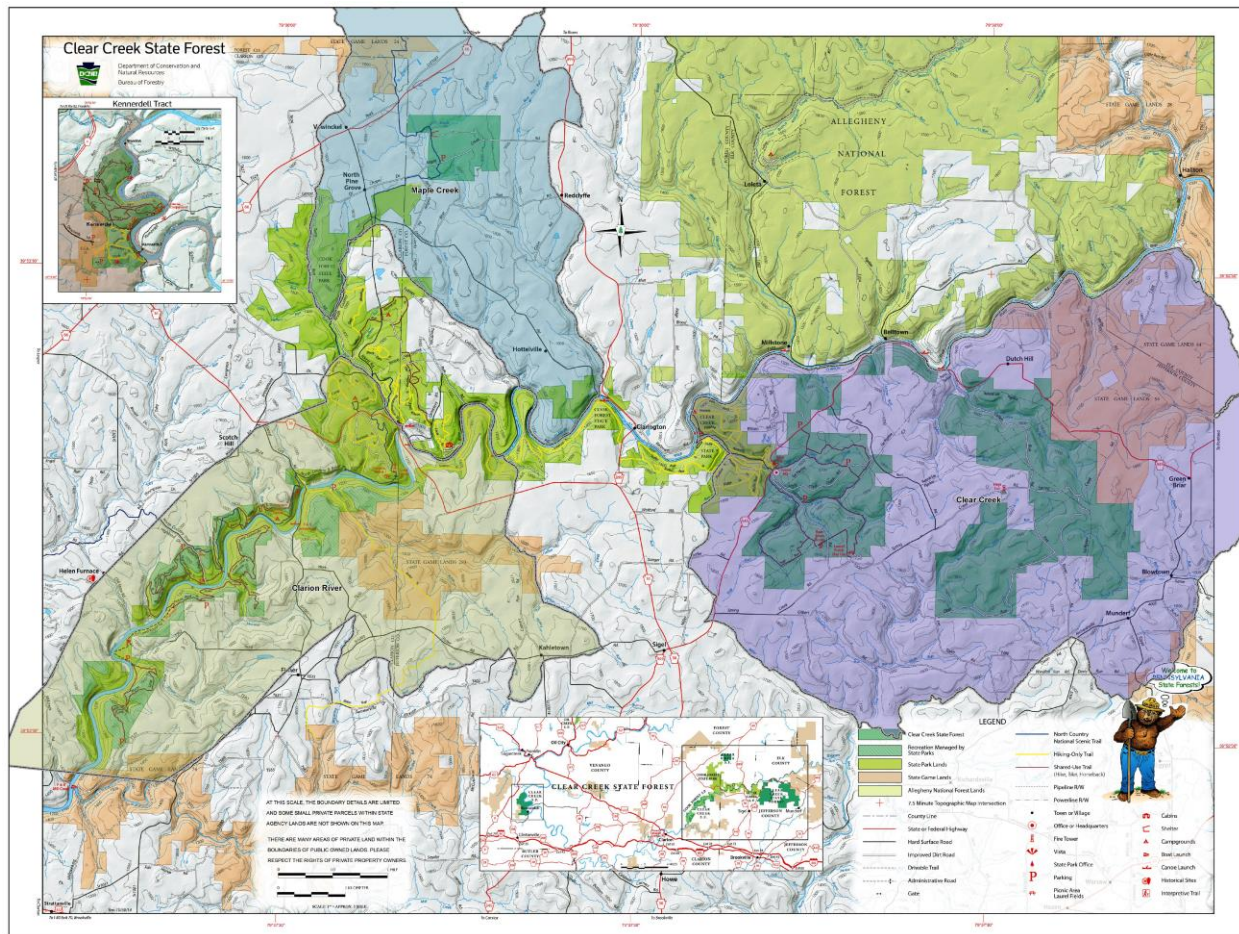
There are many different invasive plants, insects, and diseases that threaten the health of the Clear Creek State Forest. We will utilize early detection and rapid response to eradicate or control these issues.

## **Timber and Forest Products:**

The District will continue to strive to reach our allocation model while staying current with the research and conditions of the ecosystems within the Clear Creek State Forest. We will also continue and strengthen our partnerships with other research organizations to obtain acceptable regeneration while reaching our harvest allocation. We have a strong relationship with the USFS Northern Research Station where we partner to conduct research that is fundamental in the Bureau of Forestry's management of our ecosystems. We want to continue to strengthen and build this relationship.

To facilitate consistent, structured, and integrated resource management and planning across large landscape units, state forest lands and adjoining lands are organized by *Landscape Management Unit (LMU)* (described in more detail starting on page 61). LMUs are the "building blocks" of the Clear Creek State Forest Resource Management Plan, as targeted plans for each individual LMU comprise the bulk of the district plan. Each LMU plan contains an overview narrative of the LMU features, a profile that summarizes relevant data about the LMU, and a list of priority goals for which that LMU is well-suited. There are (4) LMUs in the Clear Creek Forest District (Figure i). LMU plans for this district begin on page 61.





Clear Creek State Forest District Landscape Management Units

**Figure i:** LMUs for the Clear Creek Forest District

#### List of LMUs in Clear Creek State Forest

- Clarion River Landscape Management Unit
- Clear Creek Landscape Management Unit
- Kennerdell Landscape Management Unit
- Maple Creek Landscape Management Unit

## District Priority Goals

The 2016 SFRMP set forth Principles, Goals, and Objectives that focus on the variety of resources, uses, and values of state forest land. These Principles, Goals, and Objectives were organized around 12 Resource Chapters:

- Communications
- Timber and Forest Products
- Native Wild Plants
- Wildlife
- Water Resources
- Soils
- Geologic Resources
- Wildland Fire
- Forest Health
- Recreation
- Infrastructure
- Cultural Resources

The Principles, Goals, and Objectives in the SFRMP apply universally across all of state forest land. Due to their broad application, they were written in relatively general terms. This District SFRMP provides an opportunity to prioritize goals that are more specifically applicable at the district level. The District Priority Goals that follow provide points of emphasis for state forest land management within Clear Creek State Forest over the next 5-10-year planning horizon.

### **Cultural Resources**

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We want to engage, create awareness and connect the community to the Clear Creek State Forest. Some individuals do not always know that they are on State Forest Land or the importance that the State Forest System provides. Our goal is to create more waysides within the State Forest; as well as marketing the State Forest regionally through local business and media outlets.

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quality of the experience. Connecting the local heritage and the community to the recreational opportunities on Clear State Forest is very important. Our goal is to effectively communicate all the recreational opportunities available on the State Forest and build and foster local and regional relationships.

### **Forest Health**

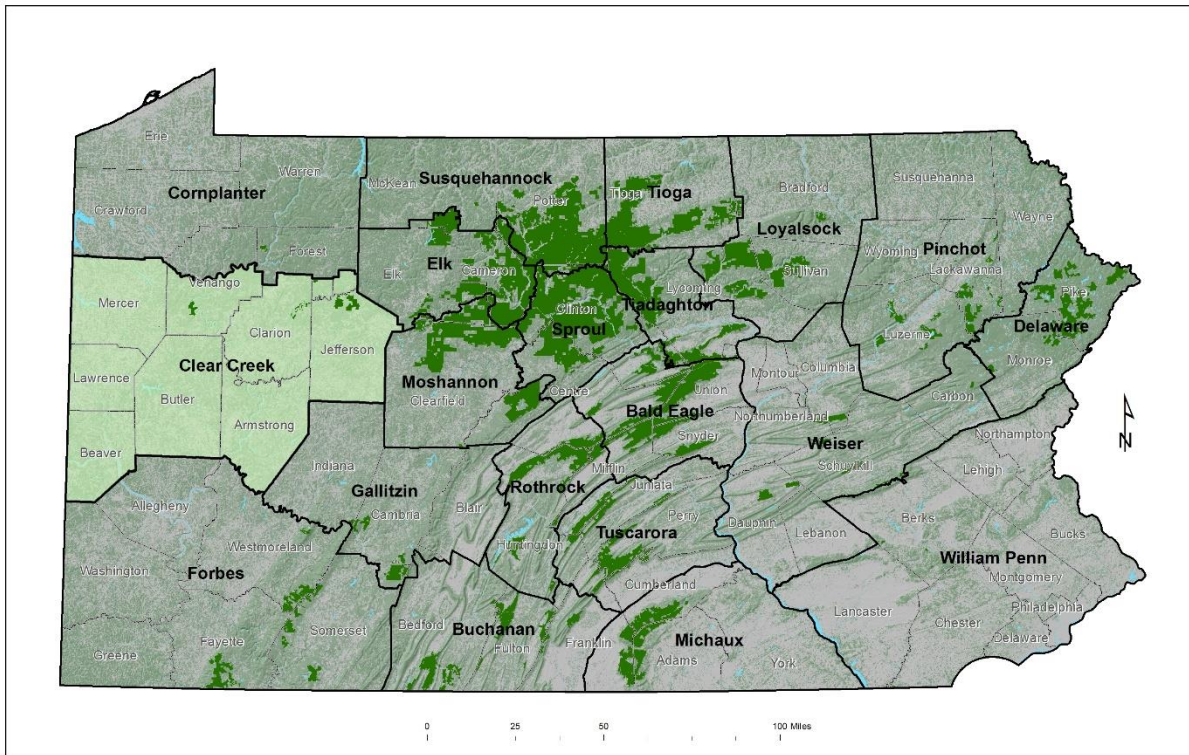
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The District will continue to strive to reach our allocation model while staying current with the research and conditions of the ecosystems within the Clear Creek State Forest. We will also continue and strengthen our partnerships with other research organizations to obtain acceptable regeneration while reaching our harvest allocation. We have a strong relationship with the USFS Northern Research Station where we partner to conduct research that is fundamental in the Bureau of Forestry's management of our ecosystems. We want to continue to strengthen and build this relationship.

## District Overview

### 1) Location and Description



**Figure 1-1.** Location of Clear Creek Forest District with state forest land (dark green).

The Clear Creek State Forest is comprised of 16,526 acres. The name of this Forest District is derived from the crystal-clear stream that flows through the Clear Creek Landscape Management Unit (LMU).

The Resource Management Center is located in Clarion at 158 South 2<sup>nd</sup> Ave and the Clear Creek Maintenance Division is located just outside of Sigel on Rte. 949. The District covers seven and a half counties including Armstrong, Beaver, Butler, Clarion, Jefferson, Lawrence, Mercer, and part of Venango County with State Forest located in Clarion, Jefferson, Mercer, and Venango counties. A large portion of Clear Creek State Forest is located within the Pennsylvania Wilds Area.

The District interacts with many recreational user groups and includes two major hiking trail systems – The North Country Trail and the Baker Trail. The State Forest borders the Allegheny and Clarion Rivers which creates a multitude of recreational use on the State Forest. Interstate 79 and Interstate 80 provide convenient access to the State Forest in a short period of time from different population centers; including Pittsburgh and Youngstown. Much of the State Forest is near different tracts of State Game Lands, Clear Creek State Park, Cook Forest State Park, and the Allegheny National Forest.

Clear Creek State Forest is known for the high-quality oak and other species that grow very well on the different soil types throughout the District. Species diversity is prevalent due to the fertile river valleys and dry plateaus where the State Forest is located. The land and forest within the Clear Creek Forest District have been utilized for different resources and has been impacted by many different disturbances over the last two centuries. These include: iron ore (1850), large timber operations (mid 1800's to 1900), oil extraction (late 1800's to present), gas extraction (early 1900's to present), large wildfires (early 1900's), chestnut blight (early 1900's), and vast areas of gypsy moth defoliation (1980's-1990's).

The Clear Creek Forest District covers approximately 2,917,120 acres with a population of 738,551 or 6% of the state's population. Below is the breakdown by county.

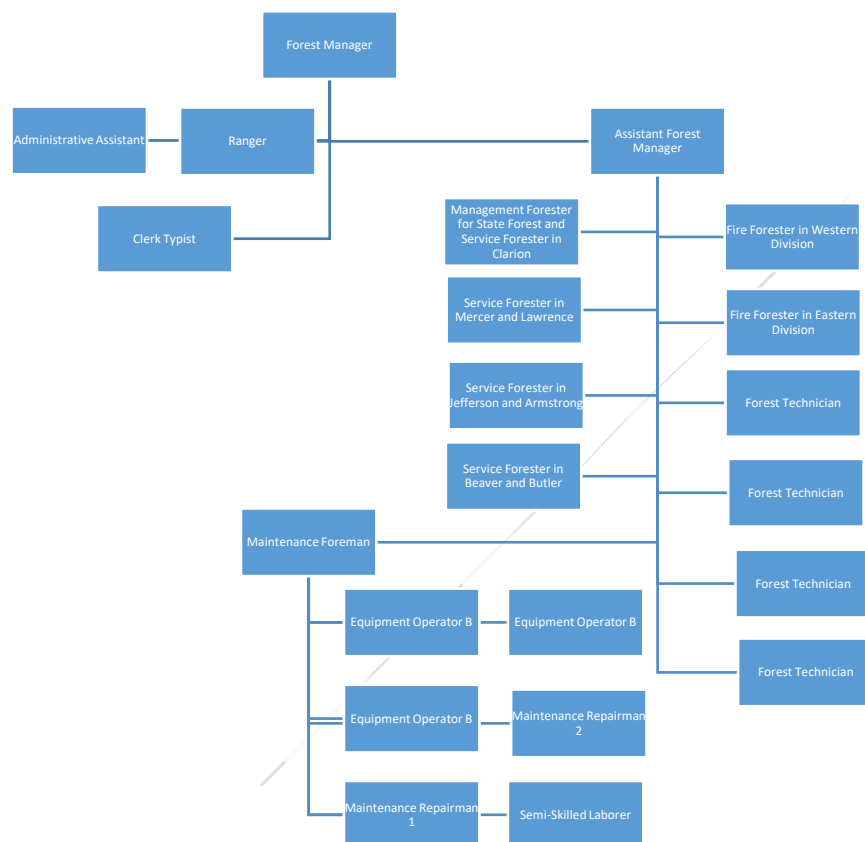
**Table 1-1.** Acres of Land and Population acquired from the United States Census Bureau

| <b>County</b> | <b>Acres of Land</b> | <b>Population</b> |
|---------------|----------------------|-------------------|
| Armstrong     | 424,960              | 68,941            |
| Beaver        | 284,160              | 170,539           |
| Butler        | 508,800              | 183,862           |
| Clarion       | 390,400              | 39,988            |
| Jefferson     | 420,480              | 45,200            |
| Lawrence      | 232,320              | 91,108            |
| Mercer        | 437,120              | 112,913           |
| ½ of Venango  | 218,880              | 26,291            |

## 2) District Organization and Human Resources

The Clear Creek State Forest is one of the 20 state forest districts administered by the Pennsylvania Department of Conservation and Natural Resources, Bureau of Forestry. It comprises about .75% of the 2.2 million-acre state forest systems. Within the bureau, the administrative responsibility of the Clear Creek State Forest is delegated to the District Forester, whose office is located at 158 South Second Avenue, Clarion, PA 16214. The District Forester is responsible for executing all the sections of the State Forest Resource Management Plan and works with an Assistant District Forester and their staff to achieve the goals and objectives. There is one Maintenance Supervisor who reports to the Assistant District Forester and the Clear Creek Maintenance Division is located at 12622 Rt. 949, Sigel, PA 15860.

The following is an organizational chart of the Clear Creek Forest District staff:



### 3) Historical Land Use and Disturbance

#### Early Timbering:

According to Kate M. Scott's "History of Jefferson County, Pa." published in 1888, the first sawmill in Heath Township was built in 1833. Another source puts the first Polk Township mill as 1844. The early mills were generally located on streams and cut white pine and hemlock nearly exclusively. Most of the timbers were then made into rafts and floated down the Clarion River to Pittsburgh. Records show that at least three logging railroads existed on what is now the Clear Creek State Forest.

In the spring of 1864, the firm of Wright and Pier began hauling logs by rail. The line ran from a point in southeastern Heath Township to the firm's sawmill at the mouth of Callen Run on the Clarion River, a distance of four miles. This railroad is reported to be the first one in Pennsylvania built specifically for hauling timber and lumber using a steam locomotive. It was Mr. Wright's idea to use a locomotive in place of horses, and he employed "Brush" Baxter, one of the foremost millwrights of that time, along with Silas Miller of Brookville to help him design and build the locomotive. Apparently, none of the men had any knowledge of steam power.

A small portable boiler and engine of about eight horsepower was purchased in Pittsburgh, shipped to the mouth of Red Bank Creek, and from there it was hauled on a wagon to its destination, a distance of almost 60 miles. Construction must have been makeshift and rather crude. According to Mr. Baxter's description, "When completed, it is safe to say, it was the queerest looking locomotive the world had ever seen."

The railroad was built of cribbing and stringers having wooden rails. It is interesting to note that the rails were bored and pinned to the stringers with wooden pins. The locomotive was built to run in one direction, and traveling in reverse, could push only one car to the work site because of the steepness of the grades. On the run to the mill, which was made much of the way by gravity, braking was done solely from the rear end of the log car.

David Stiles from Brookville performed the various tasks of locomotive engineer, brakeman, and log loader by himself. To make matters even more difficult, the run to the mill was made at night without the aid of any kind of light!

Between 1864 and 1866, the Frazier Railroad was built. Following Clear Creek in the western part of Heath Township, it covered a distance of two and one-half miles, ending at the steam sawmill of S & W Burns in Barnett Township, Jefferson County. It is not known what type of rail was used or whether or not a locomotive did the hauling. Horse trams were then in common use.

The Brookville Railway began operating on January 1, 1897, mainly between the band mill of Heidrick, Matson, and Co. in Brookville, to a location named "Hays Lot" in southern Heath Township, a distance of 13.1-miles. Records on the exact location are not clear, but the main line to the Hays tract probably passed close to what is now the boundary separating compartments 2 and 3. A section of logging spur track appears to have followed the headwaters of Clear Run, and if so, part of this line would have been located in the northwestern corner of compartment 2.

The Brookville sawmill closed in July of 1905, but the Brookville Railway remained in place for several years under the control of the Pennsylvania Railroad.

Charles Lucas states that by 1905 cutting of the virgin forest from present state forest land was nearly finished. It is believed that a mill was still operating on the M. M. Fisher tract near the headwaters of Trap Run about 1913.

The second growth forests that followed the lumbering operations contained many more hardwoods than the original



stands. Red, white, black, chestnut and scarlet oaks, chestnut, and smaller amounts of red maple, cherry, birch, beech and tulip poplar made up most of the new growth.

Mr. Lucas recalls a large fire that burned several thousand acres and killed one person about 1905. He believes that most of the present state forest burned over at that time. The fire apparently started near the present Sigel Hotel in the morning and spread north and east jumping the Clarion River near Heath Pump Station in the afternoon and spreading nearly to Loleta before it was extinguished by rain. Butt rot and old fire scars found in many stands today could probably be traced to this blaze, which undoubtedly contributed to the present-day lack of sizeable white pine, hemlock, and red maple on any but the wetter and otherwise protected sites in the forest.

Scattered groups of pitch pine and aspen now found in the forest may owe their existence to this fire.

As the timber business was dying in Jefferson County, a new industry appeared. On October 22, 1895, the first oil strike in Jefferson County was made on the Lathrop property on Callen Run in Heath Township. Much of the Lathrop tract is now state forest, being part of the purchase made in 1928 from Buzard. Drilling for oil and gas has continued to the present time in the area. Various oil and gas companies own the majority of the rights to these resources under the present Clear Creek State Forest.

This industry has left the forest dotted with well site clearings and traversed with an extensive network of "lease" roads and cleared pipelines. Some damage to trees near wells and along rod lines has resulted and consideration of unburied pipelines has to be made in laying out timber sales.

### **Insect and Disease**

Chestnut blight appeared in the area about 1912. By 1918, most of the chestnut was dead, although some large trees were reported present as late as 1924. Much of the dead chestnut was utilized for signposts and firewood in Clear Creek State Park. Some posts are still occasionally sold by permit although most of the useable material is now gone. White and chestnut oak apparently replaced the chestnut in most of the stands.

The Clear Creek State Forest has mostly escaped the insect outbreaks that have plagued other state forests over the years. The pit making oak scale has killed some trees in compartment 6 and oak leaf rollers caused a light defoliation in 1970. The gypsy moth, a major threat to Pennsylvania's forests in recent years, began to be noticed on public land in Jefferson County during the summer of 1980. Within three years, the infestation had reached levels high enough to justify a spray program. In May 1984, 6,450-acres of the Clear Creek State Forest were sprayed, involving compartments 2 through 8.

### **White-tailed Deer**

The deer herd, statewide, and in the Clear Creek Forest District began its buildup in 1915 after the original virgin timber had been harvested and burned and the cutover areas were developing into hardwood stands. Prior to the lumbering in this area, deer were relatively scarce. Severe winters and heavy winter mortality in the late 1970's reduced the deer herd temporarily, but populations rebounded and remained too high for the landscape through to the early 2000's. However, since the early 2000's, deer numbers have dropped back to somewhat manageable levels and there has been an observed reduction in deer browse on desirable tree seedlings on the Clear Creek State Forest.

The historic over-browsing of tree seedlings by deer has been a major problem in the Clear Creek State Forest. Heavy

browsing before and after regeneration timber harvests delays the establishment of the new hardwood stands. Over browsing caused many areas to become open areas of grass and ferns. The survival of tree reproduction on regeneration cuts is related to the number of deer per unit area. The heavy browsing in regeneration cuts reduces both the height and density of commercial reproduction. Browsing adds years to the rotation period, and the longer the delay in regenerating a stand the greater the risk of further reduction in the density of stems and diversity of species. Quality of the reproduction is also affected. Repeated browsing on the commercial tree growth has resulted in multiple stems from the roots and the browsing of non-preferred species like beech, birch, and striped maple has encouraged these species to occupy the area formerly occupied by more valuable cherries and oaks. These impacts play heavily on the health, compositions and stocking of forest stands for decades to come and have led to the whole sale loss of native herbaceous and shrub communities throughout much of the forest, as well as the seed source for these populations to become re-established naturally.

The Clear Creek Forest District has approximately 50 deer fence enclosures to keep deer out of recent timber sale areas to temporarily protect young desirable tree seedlings from deer browse until they get out of the reach from deer.

### **Storms**

Storms have also had their influence on the forest. Old records describe a sleet storm breaking down a large number of trees in the state forest in March of 1936. This timber was not salvaged until 1939 when it was sold "on a selective cutting basis for chemical wood and small dimension stock." No record of the exact location of this storm damage or the volume of timber salvaged has been found. However, it is known that a sawmill was operating along the McNeil Station Road in compartment 3 about 1939, and old planting records show 35-acres of red pine and Japanese larch having been planted in the storm damaged area at the junction of Spring Creek and the Brookville-Munderf Road in 1937. In this latter area, the conifers have been suppressed, and the stand is now essentially a two-story one with an over story of red oak saw timber and an under story of oak and red maple poles.

Timber on about 45-acres was wind thrown near Burkett Road and PA 949 in November 1965. This timber was later salvaged.

In August 1970, a windstorm damaged approximately 250-acres of compartment 3. One hundred twenty-five acres of this area was clear-cut. On the remainder, the damaged timber was removed as part of an improvement cut.

More damage was done again by wind in September 1984, when several areas in compartment 3 were hit. In all but one of these, the damage was slight. The worst, a shelter wood timber sale area on which cutting had been completed just a month earlier, saw 114 crop trees uprooted over most of its 63-acres.

### **Wildfire**

By 1905, nearly all the virgin forest had been cut from the present State Forest Land and most of the area was burned over. The fire apparently started near the present Sigel Hotel and spread north and east, jumping the Clarion River near Heath Pump Station and spreading nearly to Loleta before it was extinguished by rain.

Probably the first job in managing the Clear Creek State Forest was providing adequate fire protection. Late in 1921, the forest's first fire tower, which overlooks all the forest except compartment 1, was built in the southern part of Heath Township, Jefferson County. Named Seneca after an Indian tribe, it was later renamed Hays Lot, the local name of the state forest land over which it commanded an excellent view. Because of faulty footers, the tower was blown over on March 9, 1942, but was repaired.

Seven years later, Strattanville Tower was built by popular subscription. Local contributions totaled \$100. An acre of ground was purchased from the Eureka Mining Co., thus becoming the first acre of state forest land in Clarion County. The tower was named after the village of its location, about three miles east of Clarion.

Cook Forest Tower was erected in August of 1929. The structure was part of a development plan after the purchase of Cook Forest State Park by an act of legislation. Site selection was difficult since there was no ideal high spot and big timber blocked the view in certain areas. Unlike the others, this tower's primary purpose was sightseeing. In December of 1973, the tower was turned over to the Bureau of State Parks.

Norris Hill near Reynoldsville was the site of the next fire tower added to the Forest's growing organization. Owners of a local estate deeded an acre of land for this purpose. Local industries, a sportsman's club, a utility, and other citizen donated money to pay for the construction costs. The tower was named H. B. Elliott in honor of a former member of the Pennsylvania Forestry Commission and resident of Reynoldsville. It was dedicated on August 18, 1932.

Purchased through federal ECW funds in 1935, Kahle Tower was not erected until the summer of 1937. A five-acre tract of land was secured at the junction of Clarion, Venango, Butler, and Armstrong Counties. The tower was named after Senator I. Dana Kahle who helped in securing the site and material. In 1939, the name was changed to St. Petersburg Tower to conform to accepted usage.

Today, Hays Lot Tower is the only one standing. The District no longer utilizes this tower.

### **Tree Planting**

Some tree planting was done as early as 1926. However, extensive tree planting and road building was not started until a CCC camp was established in what is now Clear Creek State Park in 1933.

Although considerable tree planting was done by the CCC, many of these plantations were failures, some because they were under planted and never released, and some, according to the records, because of drought or deer damage. The camp was in operation until 1937.

In the early 1950's, 32-acres were planted in the Corbett fields, and during the following decade, 545-acres of white pine in compartment 1 by welfare workers. Of the latter, only 137-acres have survived.

The last large-scale plantings took place in 1970 and 1980 when the 123-acre clear-cut (wind damaged in 1970) in compartment 3 was interplanted with white pine to boost its unsatisfactory stocking level and the compartment's evergreen cover component for wildlife.

## **4) Acquisitions History**

Prior to Europeans settling Pennsylvania, dense forests nearly covered the entire state, with the exception of a few natural meadows in the lowlands and scattered rocky areas in the highlands. These seemingly inexhaustible timber tracts provided the early settlers with raw materials to produce charcoal for the iron and steel industries, ties for railroads, fuel

wood and chemical distillation wood, as well as lumber for homes, buildings, furniture, barrels and boxes. The settlers never envisioned that such forests could ever disappear. However, as Pennsylvania's increasing population turned forest land into farms, and as expanding industries consumed more and more wood, the amount of standing timber grew smaller. Then, in the late 1800s, awareness began to grow that the forests were not inexhaustible. Large tracts of land once covered with virgin forests had been cutover and abandoned by the owners. Forest fires burned uncontrolled throughout much of the cutover area. Between 1860 (when Pennsylvania led the nation in lumber production) and 1900, (when it had to import lumber to fill its needs) various efforts were made to halt the depletion of the forests. The future wood supply and the restoration of once-forested areas greatly concerned conservation-minded citizens.

In 1887, the Pennsylvania General Assembly authorized the governor to appoint a committee to examine and consider the subject of forestry in Pennsylvania and report its findings at the next regular session of the legislature. In 1888 a Governor's Commission was appointed to study the forest situation. Authorized by the legislature once again, the governor appointed a second commission in 1893. As a result of these studies, in 1895, Dr. J. T. Rothrock was appointed Commissioner of Forestry in the newly created Division of Forestry in the Pennsylvania Department of Agriculture. In 1897 the legislature passed an act authorizing the purchase of unseated lands for forest reservations, thus marking the beginning of the Pennsylvania State Forest System. This act provided for the acquisition of not less than 40,000 acres in the headwaters of each of the main rivers of Pennsylvania, mainly the Delaware, Susquehanna, and Ohio, providing the land selected shall be of a character better suited to the growth of trees than to mining or agriculture, and that 50% of the area have an elevation of not less than 600 feet above sea level. In 1898, 7,500 acres of land in Clinton County became the first land purchased under this new act.

The Clear Creek State Forest was founded on September 1, 1920, with the district office in Clarion where it has remained. The office occupied two small rooms in the present Crooks building at the corner of Main and Sixth Avenue. In 1948, the office was moved into a two-story frame house at 401 Wood Street. This same year the state was divided into four regions. The western region comprised the Clarion, Warren, Johnstown, Uniontown and Ligonier Districts. Regional offices occupied the first floor and the district office occupied the second floor of the Wood Street Building. Secretary Samuel Lewis abolished the regions in 1953. The following year, the office was moved to 58 S. 7th Avenue, and in October 1965, it was moved to the present location formerly occupied by the Western Pennsylvania Artificial Breeders Association.

The Clear Creek State Forest lands are located in four counties. The 16,526-acre holdings include 9,800-acres in northern Jefferson, 1,016-acres in southeastern forest, 2,481 acres in Clarion, and 3,184-acres in southern Venango County.

R. Y. Stuart, Deputy Commissioner, suggested the name Kittanning after an American Indian settlement along the Allegheny River. Since the city of Kittanning lies more than 40 air miles southeast of the forest, the name is somewhat misleading. Most local residents are familiar with the two largest tracts in Jefferson County, which comprise the earliest purchases. They have referred to the area for years as the "Clear Creek State Forest," after a stream flowing through one of these holdings. Because of this, on July 2, 1980, all of the publicly-owned forest lands in the Kittanning District were officially given that name. At that time, the tract in Venango County had not yet come under Bureau of Forestry administration.

The first section of the forest purchased was the 3,200-acre Frazier tract, bought for \$6,880 in January 1919. Most of compartments 6, 7, and 8 came from this purchase.

The next acquisition was the 2,481-acres purchased from Reuben Baughman in 1920. All of compartment 2 and all of compartment 3 lying in Polk Township came from this purchase.

Two tracts totaling 673-acres were purchased from M. M. Fisher et. al. in 1928. One tract makes up the southernmost section of compartment 6. The other is now part of compartment 7.

All of compartment 4 and 5 were obtained through the 2,419-acres purchased from J. M. Buzard in 1928. A small part of this purchase lying just south of the Spring Creek Road is now part of compartment 3. In 1929, two small tracts were added. One hundred six acres were purchased from Wallace and Hughes and another 133-acres from John M. Wallace. The latter piece lies in compartment 8 along Pine Run.

Three hundred sixty-three acres were purchased from the Susquehanna Chemical Co. in 1949. This tract lies in

compartment 7 and includes the area commonly called the Corbett fields.

The 1,012-acre tract in Forest County that makes up compartment 1 was purchased in 1952 from Walter S. Haskell, et. al. About 1963, 998-acres of the Clear Creek State Forest were set aside for the establishment of Clear Creek State Park. Sometime after 1964, the area was expanded when the Bureau of Parks purchased 210 acres of land from H. W. Miller. The Bureau of Forestry was responsible for the operation of the Park until about 1965.

In 1970, an interior holding of 105-acres was purchased from Howard Gaydosh. It is now part of compartments 3 and 4. A 433-acre tract originally obtained in 1949 from the Cook Forest Association was transferred from the Bureau of State Parks to the Bureau of Forestry in 1971. This tract is now compartment 9.

The Lewis Painter exchange, completed on April 10, 1980, added two acres to the southeastern corner of compartment 8. On July 18, 1980, an area of 3,184-acres, which was originally proposed for a state park, was also transferred to the Bureau of Forestry from the Bureau of State Parks. Purchase of the 22 parcels making up this tract was done by DER through direct settlements with the landowners, and took place from October 28, 1970, to November 7, 1973. The total cost to the Commonwealth was \$392,275. This tract comprises compartments 10 and 11.

The previous owners are:

W. L. Harris     Harold A. Workman

Wm. J. Thompson     Charles E. Myers

Gage Allam     Edward A. Myers

J. Fred Jones     Mary A. Rodgers

T. Jefferson Danner, Jr. G. R. Paden

Mary W. Dimon     Quaker State Oil Ref. Co.

The 863 Laurel Fields acquisition in August 2006 consisted of two separate parcels in Heath and Polk townships, Jefferson County. The first parcel is 722 acres that shares two miles of contiguous boundary with existing State Forest lands in Compartment 2. The second parcel is a 141 acre in-holding known locally as the "Laurel Fields" because of the large native mountain laurel plants growing in an abandoned field in the southern end of the property. The Department provided The Conservation Fund \$1,232,838.00 from the Growing Greener II Bond to purchase the land from the Headwaters Investments Group managed by Forest Investments Associates. Additional funding for the purchase was provided by the King Mellon Foundation. The Conservation Fund then transferred the property to the Bureau of Forestry. In February 2008 the Clarion River Tract acquisition of 1,600 acres of land and an additional 1,700 acres of Timber Rights was purchased from the Lyme Timber Company through the Western Pennsylvania Conservancy. The funding for the purchase was provided again by GGII and the King Mellon Foundation.

On June 24, 2010 a land exchange with the Pennsylvania Game Commission was finalized that transferred 4,753 acres of Game Land 283 along the Clarion River for 4,248 acres of State Park land at Pymatuning State Park. The exchange consolidated the previous Lyme Timber Company Tracts. An agreement between State Parks and the Bureau of Forestry designated management responsibility of the Clarion River Corridor lands below the 1400-foot contour to Cook Forest State Park with the above lands to the Clear Creek State Forest.



## 5) Cultural and Historic Resources

|                            |    |
|----------------------------|----|
| Cultural                   | 38 |
| CCC Camp                   | 1  |
| Homestead                  | 2  |
| Logging Camp               | 11 |
| Logging RR Grade           | 10 |
| Mill Site                  | 9  |
| Old Building Foundation    | 4  |
| Other                      | 1  |
| Ecological                 | 36 |
| American Chestnut > 10 dbh | 1  |
| Archeological Site         | 1  |
| Furnace                    | 1  |
| Quarry                     | 4  |
| Spring                     | 12 |
| Vernal Pool                | 15 |
| Wetland <1 acre            | 2  |
| Grand Total                | 74 |

### Bullion Iron Furnace

Built in 1843 and operated until 1857 this furnace was also known as Cross's Furnace. Iron furnaces were typically built near a hillside so that the raw materials (iron ore, charcoal and lime) could be "charged" into the open top from a charging platform. The nearby stream provided waterpower to operate a bellows that forced air into the furnace. The furnace is only accessible by hiking trail.

### Oil Pumping Station

There is an oil pumping station along the Allegheny River just below Franklin. The pumping station dates back to the 1800's and old oak barrels can be found all along the Kennerdell LMU.

### Historic Logging Sites

The first use of a steam powered locomotive in Pennsylvania was on Callen Run in 1864. Numerous sawmills, logging camps, and other rail road grades dot the landscape as a reminder of the influence logging had on the forest then and now.

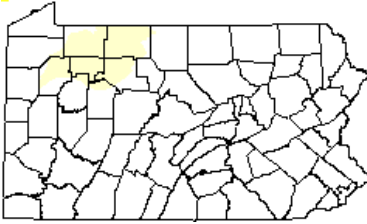
### CCC Camp

There is one CCC Camp located at Clear Creek State Park. Just across the road on the Clear Creek State Forest you can see the work that they achieved in a short period of time, stemming from road projects to tree plantings.

## 6) Ecoregion, Physiography, and Land Cover

Following is a detailed description developed by the Bureau of Topographic and Geologic Survey of the Eco-regions (Physiographic Sections) contained in the Clear Creek State Forest. This information is located on the Bureau of Topographic and Geologic Survey's website, indicated by the links below.

#### High Plateau Eco-Region:

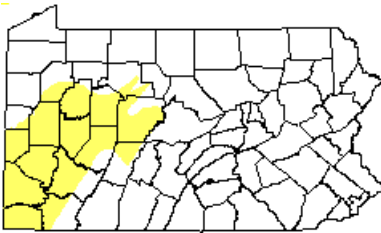


The High Plateau Section consists of broad, rounded to flat uplands cut by deep angular valleys. Flat-lying sandstones and conglomerates underlie the uplands. Local relief between valley bottoms and adjacent uplands can be as much as 1,000 feet but is generally in the area of half that amount. Elevations in the Section range from 1,080 to 2,500 feet. Drainage of the area has a dendritic pattern. The western boundary of the Section is the Late Wisconsin glacial border. Pre-Wisconsin glaciers glaciated the area between this border and the Allegheny River a few miles to the east. Trees of the

Allegheny National Forest cover a large part of the Section. There are a number of Federal Recreation Areas within the forest, mainly associated with Allegheny Reservoir.

The Section occurs in northwestern Pennsylvania and includes all of Forest County, most of Venango, Warren, McKean, and Elk Counties, and small parts of Potter, Jefferson, and Clarion Counties.

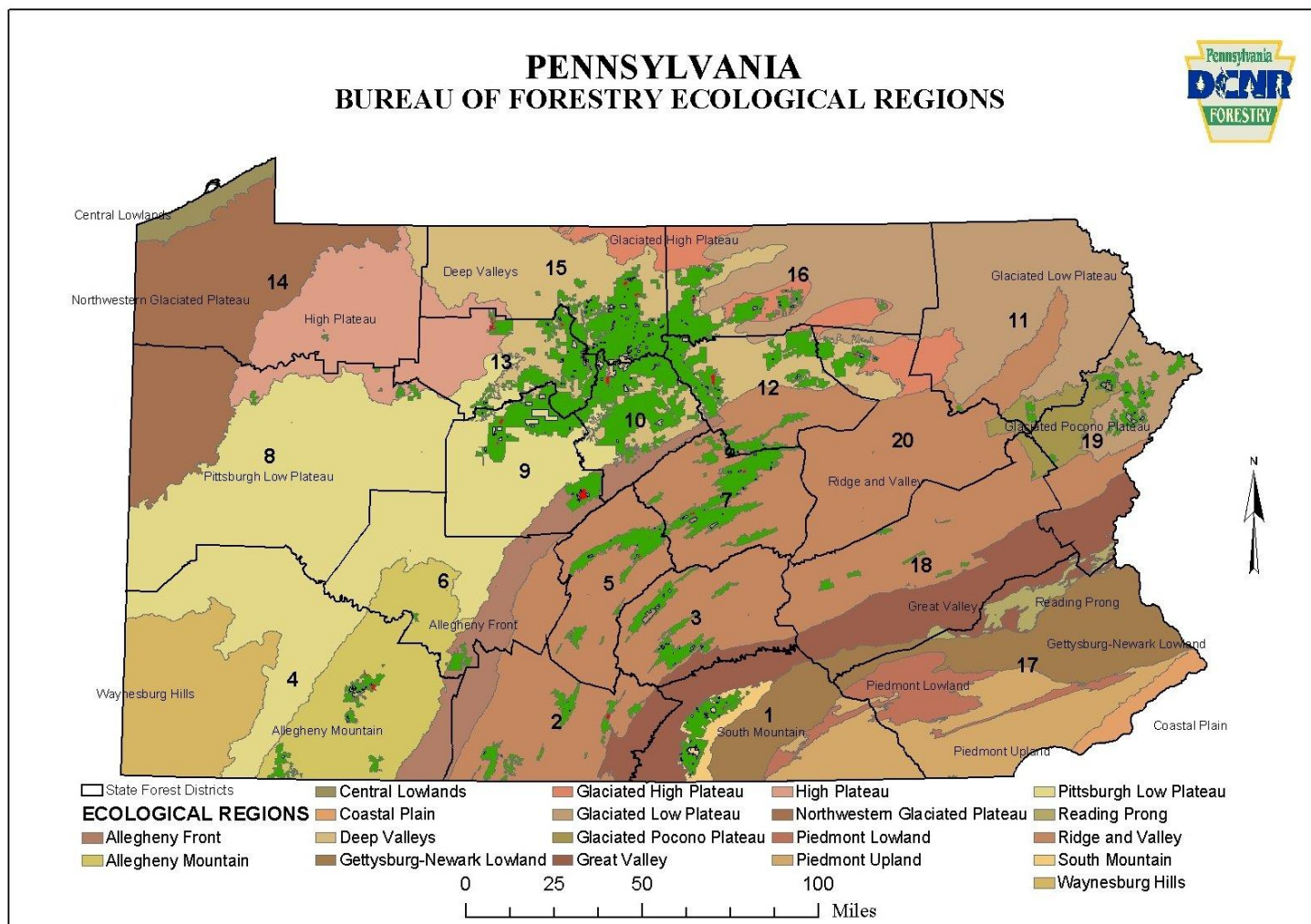
#### The Pittsburgh Low Plateau Eco-Region:



The Pittsburgh Low Plateau Section consists of a smooth undulating upland surface cut by numerous, narrow, relatively shallow valleys. The uplands are developed on rocks containing the bulk of the significant bituminous coal in Pennsylvania. The landscape reflects this by the presence of some operating surface mines, many old stripping areas, and many reclaimed stripping areas. The local relief on the uplands is generally less than 200 feet. Local relief between valley bottoms and upland surfaces may be as much as 600 feet. Valley sides are usually moderately steep except in the upper reaches of streams

where the side slopes are fairly gentle. Elevations range from 660 to 1,700 feet. Some of the land surface in the southwestern part of the Section is very susceptible to landslides.

The Section covers much of western and southwestern Pennsylvania. It includes all of Greene, Washington, and Armstrong Counties, most of Beaver, Butler, Clarion, Jefferson, Clearfield, Westmoreland, and Indiana Counties, and parts of Lawrence, Venango, Elk, Cambria, and Fayette Counties.



**Figure 6-1.** Eco-regions of Pennsylvania with state forest districts overlaid.

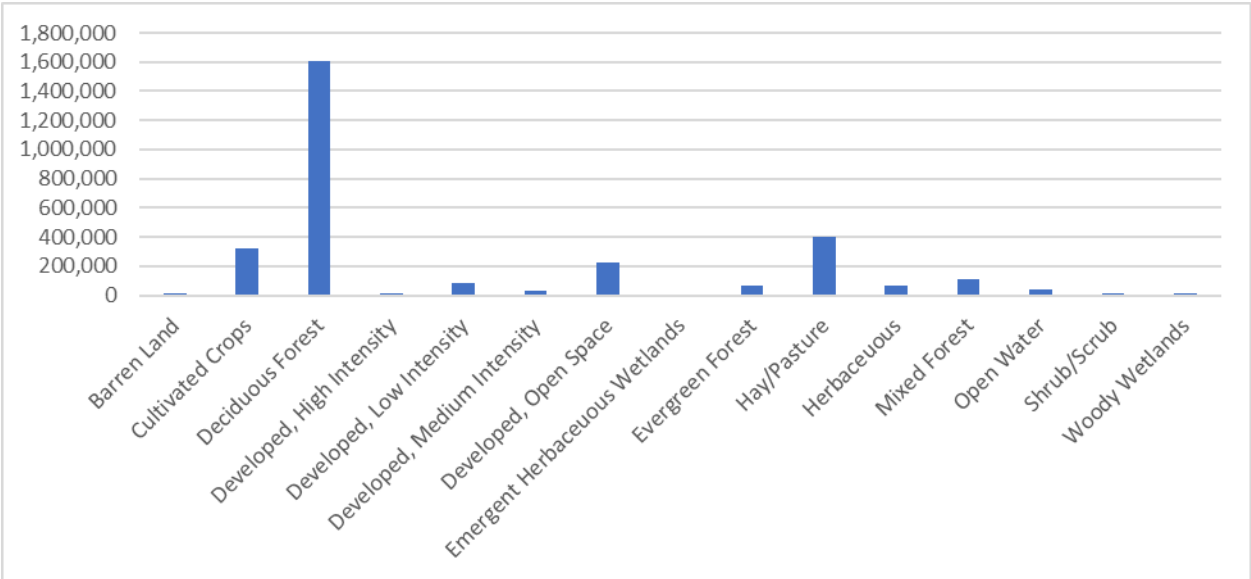
The Clear Creek State forest is located near the southern edge of the High Plateau Section of the Appalachian Plateau Province in Northwestern Pennsylvania. The area is characterized by rounded to flat uplands with deep angular valleys and dendritic drainage patterns. The underlying rock strata are composed of sandstone, siltstone, shale, and conglomerate rock. There are coal deposits in this area of Pennsylvania, but there is no known coal deposit located on the State Forest.

A main attraction to Clear Creek State Forest is Beartown Rocks. Beartown Rocks is a rock city with a view. Large blocks of rock, separated by narrow to wide “streets,” occupy a wooded knoll on the state forest land. The rocks are erosion resistant, mostly light-olive gray, coarse-grained sandstone of the Pennsylvanian-age Pottsville Formation, approximately 320 million years old. The rocks have shifted and tilted after detaching from the bedrock during the last glacial period (although glaciers did not reach Jefferson County). Some of the blocks have become widely separated, probably first from jointing, then frost or ice wedging, and then from downslope sliding under near-glacial conditions. The sandstone is thin to medium bedded, and some sandstone layers display prominent crossbedding. Other layers show a distinct honeycomb weathering pattern. The site is less than a mile north of the Kellersburg anticlinal axis, which is oriented approximately N50°E. The viewing platform is at an elevation of about 1,884 feet. Additionally, in fall of 2018, another rock city, Pine

Run Rocks, will be accessible to the public via the Pine Run Loop Trail.

A large number of gas and oil wells have been drilled on the State Forest in all compartments. The wells in the northeastern part of the District range in depth from 1,700 feet to 3,100 feet deep and are extracting oil and gas from various Upper Devonian sandstones. The wells in the Allegheny River Tract located in Venango County are accessing the Upper Devonian Venango sandstones and range in depth from 400 feet to 1,100 feet deep. Most of the oil has been extracted from these reserves leaving only a few active oil wells. There are approximately 100 active gas wells on State Forest lands in the District. There are many more wells that have been plugged or are no longer productive.

The Callen Run area in northeastern Jefferson County contains 3,200 acres of potential gas storage fields. With the exception of Compartment 9, where the Commonwealth has 1/8 ownership of seven active wells, the oil and gas rights on all other State Forest Lands in the District are privately owned. The hard minerals are also owned privately, on most of the State Forest.

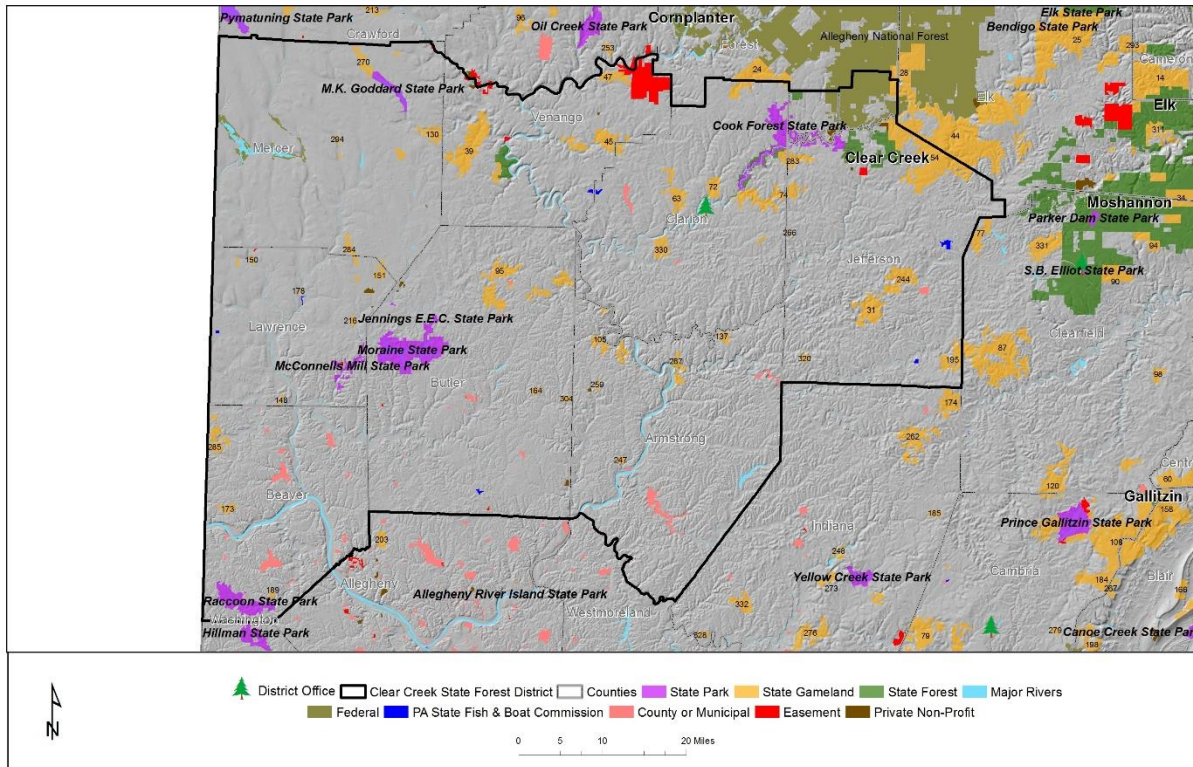


**Figure 6-2.** Acres of land cover types from National Land Cover Database for entire district.

The Clear Creek Forest District covers such a vast area and differing topography that all different types of land cover can be found within the District. Deciduous forests make up the large majority of the District, but the flora and fauna are unique due to the Allegheny and Clarion rivers flowing through the District.

If you travel from east to west, you will see vast tracts of forested land, reverting strip mines, swamps and farmland with small wooded areas that were not ideal for agriculture. Within that range you will also notice the urban/suburban areas increase; as you get closer to Pittsburgh and Youngstown.

Public forest land within the District includes ownership by the Pennsylvania Game Commission, DCNR Bureau of State Parks, DCNR Bureau of Forestry and Allegheny National Forest.

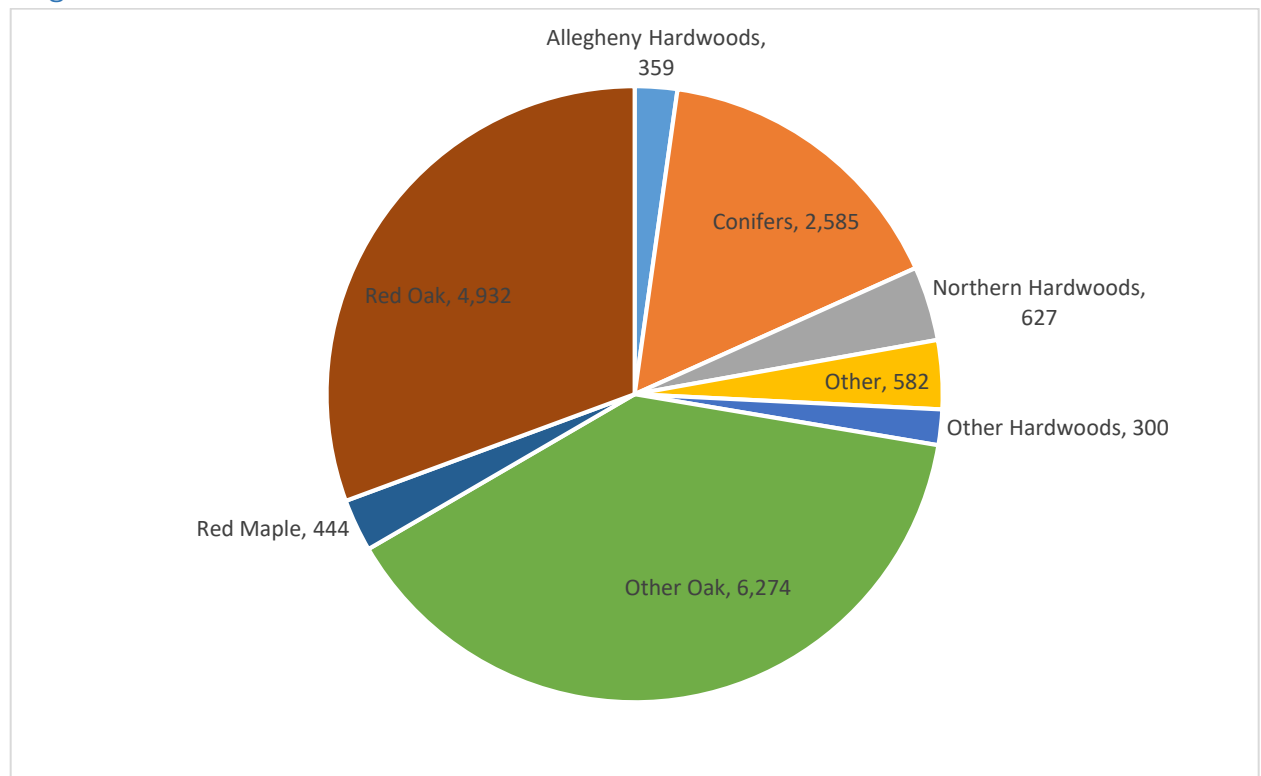


**Figure 6-4. Public lands within entire district.**

Most of the forest land in the district is owned by private non-commercial landowners but there are large tracts of forestland which are open to the public that include state parks, state game lands, Allegheny National Forest, Army Corps of Engineers, commercial timber companies, and the Clear Creek State Forest.



## 7) Vegetation Communities and Native Flora



**Figure 7-1.** Acreage of state forest land in this district by aggregated forest type. The forest types are described on p. 108 of the 2016 SFRMP.

On state forest land, more than 50 typed plant communities have been identified in accordance with the bureau's typing manual. The bureau recognizes seven aggregated forest types on state forest land, and each forest type includes one or several dominant plant communities (see Table XX). For definitions and characteristics of each plant community, see <http://www.naturalheritage.state.pa.us/communities.aspx>.

| Aggregated Forest Type | Dominant Plant Communities                                  |
|------------------------|---|
| Allegheny hardwoods    | Black cherry-northern hardwood forest                       |
| Northern hardwoods     | Northern hardwood forest<br>Sugar maple-basswood forest     |
| Red oak                | Red oak-mixed hardwood forest                               |
| Other oak              | Mixed oak — mixed hardwood forest<br>Dry oak — heath forest |
| Red maple              | Red maple forest  |

|          |   |
|----------|---|
| Conifers | Dry white pine (hemlock) — oak forest<br>Hemlock (white pine) — northern hardwood forest<br>Hemlock (white pine) — red oak — mixed hardwood forest<br>Red pine — mixed hardwood forest<br>Spruce plantation |
| Other    | Aspen-Grey (paper) birch forest<br>Pitch pine-mixed oak forest<br>Tuliptree-maple forest<br>Black gum ridgetop forest   |

**Table 7-1.** Definitions of Aggregated forest types and dominant plant communities.

Red oak and mixed oaks including white, chestnut, scarlet, and black make up the majority of the forest types of the Clear Creek State Forest. Even though the oaks make up the majority of the composition, there is still a large amount of acreage that consists of red maple, eastern hemlock, black cherry, sugar maple, white ash, white pine, and American beech as well as other species.

The District is rich in species diversity due to the quality of the soils, flood plains, ravines, and river corridors.

Some of the shrub and herbaceous components of the major forest types are as follows:

Dry oak - heath forest:

The shrub layer is dominantly ericaceous; common species include *Kalmia latifolia* (mountain laurel), *Gaylussacia baccata* (black huckleberry), *Vaccinium pallidum* (lowbush blueberry), *V. angustifolium* (low sweet blueberry), *Viburnum acerifolium* (maple-leaved viburnum), and in more open areas, *Comptonia perigrina* (sweet-fern). Owing largely to the thick, resistant oak/ericad leaf litter, the herbaceous layer is generally sparse. Common constituents include *Maianthemum canadense* (Canada mayflower), *Carex pensylvanica* (Pennsylvania sedge), *Carex communis* (a sedge), *Chimaphila maculata* (pipissewa), *Epigaea repens* (trailing arbutus), *Gaultheria procumbens* (teaberry), *Aralia nudicaulis* (wild sarsaparilla), *Pteridium aquilinum* (bracken fern), and *Cypripedium acaule* (pink lady's-slipper).

Dry oak-mixed hardwood forest:

**AR Red Oak - Mixed Hardwood Forest:** This forest type is common in much of Pennsylvania. It occurs on fairly mesic sites and is quite variable in composition. northern red oak (*Quercus rubra*) is the dominant overstory species in these stands with greater than 40% of the total basal area. Associated tree species typically include red maple (*Acer rubrum*), Chestnut oak (*Quercus montana*), black oak (*Quercus velutina*), white oak (*Quercus alba*), mockernut hickory (*Carya tomentosa*), shagbark hickory (*Carya ovata*), sweet birch (*Betula lenta*), yellow birch (*Betula alleghaniensis*), white ash (*Fraxinus americana*), American beech (*Fagus grandifolia*), and/or tuliptree (*Liriodendron tulipifera*). The shrub layer often includes northern arrow-wood (*Viburnum recognitum*), maple-leaved viburnum (*Viburnum acerifolium*), smooth serviceberry (*Amelanchier laevis*), shadbush (*Amelanchier arborea*), striped maple (*Acer pensylvanica*), hornbeam (*Carpinus caroliniana*), hop-hornbeam (*Ostrya virginiana*), witch hazel (*Hamamelis virginiana*), and spicebush (*Lindera benzoin*). Ericaceous shrubs such as mountain laurel (*Kalmia latifolia*), low sweet blueberry (*Vaccinium angustifolium*) and lowbush blueberry (*Vaccinium pallidum*) may also be present but are not abundant. The herbaceous layer is highly variable. Representative species may include sessile-leaved bellwort (*Uvularia sessilifolia*), false Solomon's-seal (*Maianthemum racemosum*), may-apple (*Podophyllum peltatum*), pipissewa (*Chimaphila maculata*), teaberry (*Gaultheria*

*procumbens*), partridge berry (*Mitchella repens*), white wood aster (*Eurybia divaricata*), Indian cucumber-root (*Medeola virginiana*), squaw-root (*Conopholis americana*), wood ferns (*Dryopteris* spp.), and hay-scented fern (*Dennstaedtia punctilobula*).

The shrub layer is perhaps more diagnostic. Characteristic shrubs include *Cornus florida* (flowering dogwood), *Carpinus caroliniana* (hornbeam), *Corylus cornuta* (beaked hazelnut), *Amelanchier arborea* (shadbush), *Cercis canadensis* (redbud), and *Ostrya virginiana* (hop-hornbeam). Ericaceous shrubs are uncommon, although *Kalmia latifolia* (mountain laurel) does occur on some sites. This type usually contains a somewhat richer herbaceous flora than the "Dry oak-heath" forest type (although restricted by moisture availability). Herbaceous species include *Smilacina racemosa* (false Solomon's-seal), *Uvularia sessilifolia* (wild-oats), *Polygonatum biflorum* (Solomon's-seal), *Asplenium platyneuron* (ebony spleenwort), *Desmodium* spp. (tick-trefoil), *Hieracium venosum* (rattlesnake weed), *Aralia nudicaulis* (wild sarsaparilla), *Carex pensylvanica* (a sedge), *Carex communis* (a sedge), and *Lysimachia quadrifolia* (whorled loosestrife).

Red oak - mixed hardwood forest:

This type occurs on less acidic to somewhat calcareous, moderately dry soils. It is most often found on south and southwest-facing slopes. Dominant species include White oak (*Quercus alba*) and/or chestnut oak (*Quercus montana*), which either alone or in combination account for a greater percentage of overstory basal area than northern red oak (*Quercus rubra*). Common trees typically include sweet birch (*Betula lenta*), shellbark hickory (*Carya cordiformis*), red maple (*Acer rubrum*), sugar maple (*Acer saccharum*), black oak (*Quercus velutina*), pignut hickory (*Carya glabra*), white ash (*Fraxinus americana*), and basswood (*Tilia americana*). Total cover by conifers does not typically exceed 25% of the overstory.

Often Eastern white pine (*Pinus strobus*) seedlings are present in the understory, as well as a variety of shrubs and mid-story trees including: flowering dogwood (*Cornus florida*), hornbeam (*Carpinus caroliniana*), beaked hazelnut (*Corylus cornuta*) and hop-hornbeam (*Ostrya virginiana*). Ericaceous shrubs are sparse, accounting for less than 30% of relative cover in the understory. When present, they may include lowbush blueberry (*Vaccinium pallidum*), low sweet blueberry (*Vaccinium angustifolium*), black huckleberry (*Gaylussacia baccata*) and mountain laurel (*Kalmia latifolia*). Herbaceous species may include false Solomon's-seal (*Smilacina racemosa*), sessile-leaved bellwort (*Uvularia sessilifolia*), ebony spleenwort (*Asplenium platyneuron*), tick-trefoils (*Desmodium* spp.), rattlesnake weed (*Hieracium venosum*), wild sarsaparilla (*Aralia nudicaulis*), Pennsylvania sedge (*Carex pensylvanica*), fibrous-root sedge (*Carex communis*), bigleaf aster (*Eurybia macrophylla*) and whorled loosestrife (*Lysimachia quadrifolia*).

Shrubs include *Viburnum recognitum* (northern arrowwood), *V. dentatum* (southern arrowwood), *V. acerifolium* (maple-leaved viburnum), *Amelanchier laevis* (smooth serviceberry), *A. arborea* (shadbush), *Kalmia latifolia* (mountain laurel), *Carpinus caroliniana* (hornbeam), *Ostrya virginiana* (hop-hornbeam), *Hamamelis virginiana* (witch-hazel), and *Lindera benzoin* (spicebush). The herbaceous layer is highly variable. Representative species include *Uvularia sessilifolia* (wildoats), *Smilacina racemosa* (false Solomon's-seal), *Podophyllum peltatum* (mayapple), *Chimaphila maculata* (pipissewa), *Gaultheria procumbens* (teaberry), *Medeola virginiana* (Indian cucumber-root), *Caulophyllum thalictroides* (blue cohosh)—on richer sites, *Dryopteris* spp. (wood ferns), and *Dennstaedtia punctilobula* (hayscented fern).

### Unique Plants and Plant Communities

There are unique plant communities in Clear Creek state forest associated with the Allegheny River, characterized in this area by tight meanders surrounded by steep valley slopes. Big bluestem Indian-grass river grassland occurs on sand/gravel

deposits and broad cobble/boulder shores along the banks of the Allegheny and other large rivers. This community may also occur on islands within the active channel of large rivers in mountainous regions of Pennsylvania. This community is predominantly composed of dense graminoid layer of warm season grasses: big bluestem (*Andropogon gerardii*), switchgrass (*Panicum virgatum*), and Indian-grass (*Sorghastrum nutans*), and others. There are usually some scattered short shrubs (less than 25% cover), including sycamore (*Platanus occidentalis*), silver maple (*Acer saccharinum*), black willow (*Salix nigra*), steplebush (*Spiraea tomentosa*), ninebark (*Physocarpus opulifolius*), and silky dogwood (*Cornus amomum*). An aquatic state-threatened plant species can be found where the water is swift and shallow, rooted in the sand and cobble covered riverbed. Another state threatened species utilizes the dry slopes along the river shoreline.

There is one wild plant sanctuary within the Clear Creek state forest which receives invasive plant management to benefit the rare plants found there.

## 8) Forest Health

A healthy forest is an association of species interacting in various ways with biotic and abiotic factors over time to create a mix of components that coexists and reacts to changing conditions in order to support forest cover, a functional equilibrium between supply and demand of essential resources, and diversity of several stages and stand structures. A healthy forest is one that can sustain itself ecologically. Processes leading to forest and tree decline are countered through processes of resilience, recovery, and rejuvenation. Retention of ecosystem integrity and function enables a healthy forest to respond to destructive agents through repair, replenishment, and regeneration of affected areas within a forest community. Non-native invasive insects and diseases are very serious threats and can have devastating impacts on the long-term health and sustainability of state forest ecosystems. Diseases, such as chestnut blight and Dutch elm disease, and insect pests, such as gypsy moth and hemlock woolly adelgid, already have significantly changed forest landscapes. Many of the invasive insects and pathogens threatening forest ecosystems first became established in urban forests. Oaks continue to be at risk from gypsy moth defoliation, while beech bark disease continues to expand and threaten beech populations. Threats to oaks and beech are especially important because they are the largest remaining sources of hard mast for wildlife. Additionally, hemlock woolly adelgid, introduced into Pennsylvania in 1967, continues to spread westward and is affecting the hemlock resource. Similarly, the emerald ash borer was detected in the Clear Creek State Forest District in 2007 and has decimated the Ash population in the district. The Spotted Lantern Fly is an exotic pest from northern China that was recently detected in eastern Pennsylvania and is a threat to fruit trees, ornamental trees, and various other woody trees and vines. Finally, other tree species, such as walnut and butternut, are threatened by other invasive insects and diseases that are established in North America.

In addition to exotic insects and diseases, intense outbreaks of native insect pests and disease, such as forest tent caterpillar and anthracnose disease, can cause severe defoliation and mortality in localized areas. The risk of mortality increases when these outbreaks occur in conjunction with other stressors, such as drought or acid deposition. Climate change adds an additional level of uncertainty to future impacts of both native and exotic forest pests. Secondary pests that attack stressed trees may become more prevalent if their tree hosts are exposed to pressures associated with climate change.

### **Emerald Ash Borer and Ash Management**

The Clear Creek State Forest District has been involved with preserving White Ash both on State Forest Land as well as some other public lands in the District. The long-term goal is to provide a viable ash seed source for repopulating the forest.

Districts will work with the Division of Forest Health to identify lingering ash. A lingering ash is defined as an ash tree that is still alive after 95% ash mortality has been present for at least two years. Locations will be georeferenced, and samples of the lingering ash will be collected by Division of Forest Health staff for study by the USDA Forest Service Northern Research Station. Districts will continue to treat selected ash with a systemic insecticide according to the Bureau's Ash Management Plan.

### **Gypsy moth management**

Perhaps the longest-standing effort to manage forest pests on state forest lands has been through the bureau's gypsy moth program. The gypsy moth has been causing significant forest damage in Pennsylvania since the 1970s. The most recent outbreak occurred between 2013 to 2016. A total of 4.3 million acres were defoliated in the state during the historical peak year of 1990. As with other pest populations, gypsy moth outbreaks have been cyclic over time, and the bureau uses an integrated pest management approach to monitor and treat gypsy moth populations to lessen tree mortality. Suppression programs have been carried out by the bureau since 1972 to minimize its impacts on the forests.

The Bureau of Forestry will continue to suppress gypsy moth populations in oak stands in forest districts and state parks.

Plant species are considered invasive when they are not native to an ecosystem and their establishment causes or is likely to cause economic, environmental, or human harm. Exotic invasive plants are one of the most serious threats to native plant communities and biodiversity. An overarching Invasive Species Management Plan exists for lands managed by DCNR. The bureau recognizes invasive plants as a serious problem to state forest lands and is developing strategies to more effectively manage them.

In a forested landscape, the effects of invasive plants on native plant communities are numerous and may include alterations to nutrient cycling, hydrology, natural fire regimes, light levels, regeneration of native tree species and understory species, and physical habitat structure. Especially critical is the direct competition with native plants for available resources, such as space and sunlight. Invasive plants, by definition, outcompete native vegetation for these resources, ultimately leading to minimization of native species on the landscape. The long-term effects of all these changes are largely unknown, but the increasing occurrence of invasive plants on state forest land raises concern about the ability of native plant communities to adapt or remain resilient to additional threats.

Invasive plants also impact a range of human activities and values. Some invasive plant species, such as kudzu, mile-a-minute and Japanese knotweed, can grow into tangled thickets that impede human use of an area. One may also encounter diminished access to waterways for recreation or increased costs of right-of-way maintenance due to invasive plants. Extensive infestations of invasive plants can decrease habitat quality for important wildlife species, and others, such as giant hogweed and poison hemlock, can cause skin inflammations on people who encounter them. Japanese barberry thickets enhance cover and habitat for mice, which could bolster tick populations and the instances of Lyme disease in an area. Treatment of Japanese barberry is a priority in many areas, and the best way to limit populations is by treating it along roadsides to stop or slow its spread into interior forests.



The bureau follows Integrated Pest Management (IPM) that utilizes a combination of prevention, monitoring, and control methods to deal with invasive plants. Strategies may include directly attacking an invasive plant population for eradication, using preventive measures for invasive plant introduction and spread, or mapping and evaluating invasive plant risks across the landscape. Among the various control methods, biological controls are used when available. As new invasive plant species continue to migrate into Pennsylvania, and existing species spread further, the impact of invasive plants, coupled with the expense of controlling them, is a continuing challenge and requires a coordinated effort within the bureau and with other agencies or landowners.

The department recognizes 92 plant species as invasive on DCNR lands and has placed an additional 22 plant species on a “watch list” to monitor their impact on natural communities. Of the 92-recognized species, 56 are known to occur on state forest lands. Different plant species pose varying degrees of threats to ecosystems and forest management operations. The invasive plant species with the greatest negative impacts on timber and regeneration operations in the Clear Creek State Forest include Japanese barberry and Japanese Stiltgrass.

Acid deposition, pollution, lack of adequate forest regeneration, forest fire, and overabundant white-tailed deer populations also impact forest ecosystems on state forest lands.

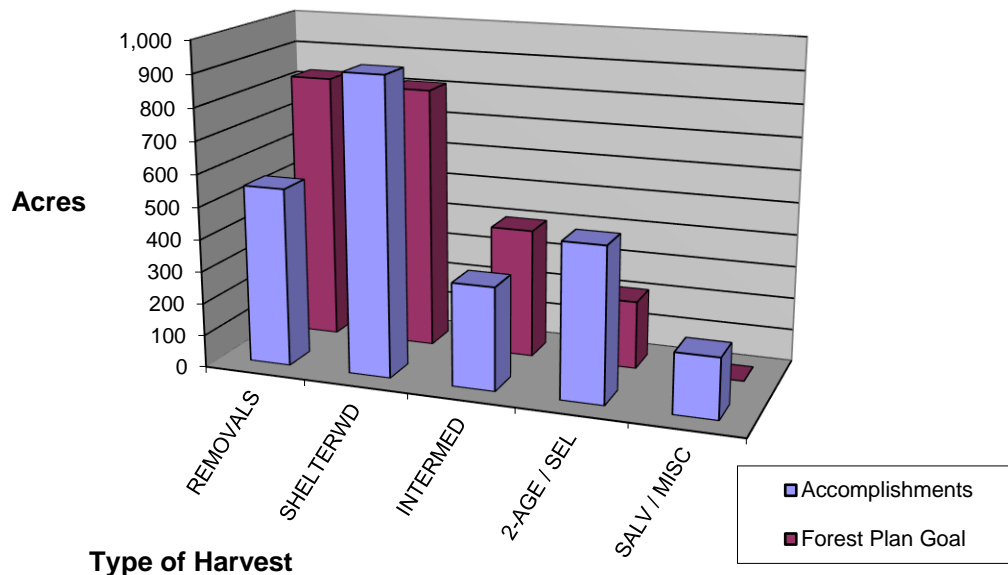
## 9) Timber Management and Forest Regeneration

The bureau created a harvest allocation model that sets timber harvest schedules for state forest land in each district. The goals of the model are to promote and maintain desired landscape conditions, create a diversity of successional stages and native forest communities, balance the age class distribution, and provide a sustained yield of quality timber. The model uses the bureau’s forest inventory data, economic information, bureau policies, and desired ending target forest conditions to develop timber harvest schedules that best meet the bureau’s silvicultural and timber management goals. A detailed discussion of the harvest allocation model can be found in the 2016 SFRMP, beginning on page 93.

The bureau is presently in the second harvest allocation period of the model. The district’s timber harvest goals for the second period are shown in the table below.

**Table 9-1.** Target shelterwood (Shelt), overstory removal (OR), intermediate (Int), and buffer treatment acreages for the second decade of the timber harvest schedule, aggregated by forest type, site class, and treatment. Additional shelterwood treatments for 3 or more stage shelterwoods are not represented in these targets.

| Aggregated Forest Community Type | Site 1 |     | Site 2 |     | Site 3 |    | Totals |     |     |        |
|----------------------------------|--------|-----|--------|-----|--------|----|--------|-----|-----|--------|
|                                  | Shelt  | OR  | Shelt  | OR  | Shelt  | OR | Shelt  | OR  | Int | Buffer |
| Northern Hardwoods               | 94     | 15  | 0      | 0   | 0      | 0  | 94     | 15  | 400 | 210    |
| Allegheny Hardwoods              | 33     | 125 | 2      | 4   | 0      | 0  | 35     | 129 |     |        |
| Red Oak                          | 388    | 371 | 0      | 0   | 0      | 0  | 388    | 371 |     |        |
| Other Oaks                       | 105    | 64  | 89     | 232 | 6      | 0  | 200    | 296 |     |        |
| Red Maple                        | 0      | 0   | 0      | 0   | 0      | 0  | 0      | 0   |     |        |
| Other Hardwoods                  | 34     | 0   | 0      | 0   | 0      | 0  | 34     | 0   |     |        |
| Conifers                         | 11     | 0   | 36     | 0   | 0      | 0  | 47     | 0   |     |        |



| HARVESTED AREA (ACREAGE)   |                               |                         |                          |  |       |                |              |
|----------------------------|-------------------------------|-------------------------|--------------------------|--|-------|----------------|--------------|
|                            | All Planned Forest Treatments |                         |                          |  |       | Salvage/ Misc. | All Harvests |
|                            | Removals (Even-aged)          | Shelterwood (Even-aged) | Intermediate (Even-aged) | Two-Age & Uneven-Age Buffer Treatments | Total |                |              |
| Executed Contracts '04-'13 | 552                           | 915                     | 318                      | 475                                    | 2,260 | 186            | 2,446        |
| Forest Plan Goal '04-'13   | 827                           | 812                     | 400                      | 210                                    | 2,249 | 0              |              |
| % of Plan Goal Achieved    | 67%                           | 113%                    | 80%                      | 226%                                   | 101%  |                |              |

**Figure 9-1.** Chart of comparison between actual harvest accomplishments and harvest allocation model goals from the first decade of implementation of the harvest allocation model. Rows from left to right represent: Overstory Removals (even-aged), Shelterwoods (even-aged), Intermediate Treatments (even-aged), Two-age and Uneven-age Buffer Treatments, and Salvage/Miscellaneous.

## 10) Wildlife

### Policy Statement

The state forests will be managed to ensure the conservation of a diversity of native wild forest animals and the provision of suitable habitats for these creatures.

## **History**

The first comprehensive management plans for State Forest lands were developed in 1949. Most forest resources were adapted to fit in with timber management as time and money allowed. In the early 1960's it became apparent that there must be a formal plan for the protection, development and use of all forest resources.

Between 1965 and 1970, work was completed on Forest Resource Plans for the 1970-1984 management period. These plans established objectives for all forest resources and coordinated their use and development. For the first time, the plans specifically addressed wildlife and fisheries resources. Matters pertaining to wildlife and fisheries were considered under the Recreation Section of the Forest Resource Plan.

In the 1970-84 Plan, habitat guidelines were developed in cooperation with the Pennsylvania Game Commission to promote a diversified forest suitable for all wildlife. Fisheries guidelines were also developed with assistance from the Pennsylvania Fish Commission (now Pennsylvania Fish & Boat Commission) to address such topics as in-stream restoration and improvement and wilderness trout stream management. Also, the coordination of the wildlife and fishery resources was accomplished through the consideration and integration of these values into the management of the other forest resources.

The 1985-2000 State Forest Resource Plan acknowledged that animals and plants are distinct forest resources and should be managed as such. Thus, a new section of the Plan was developed, the Fauna and Flora Management Section.

The 1985-2000 plan recognized that the forest is a complex ecosystem composed of animal and plant communities integrated with the physical environment. Animals in this ecosystem range from large mammals such as the black bear and white-tailed deer to invertebrates such as native bees and other pollinators. Animals, plants and physical environment integrate to form a multitude of combinations all of which form the whole, the forest. The management of these organisms is predicated on both protection and use to meet man's needs and wants.

The current plans recognize wildlife as an integral part of the forest ecosystem that are highly valuable and that should be sustained. The Bureau of Forestry Conservation Science and Ecological Services Division now watches over our forest ecosystem, monitoring State Forest, as well as some private lands.

## **Hunting**

Hunting is a recreational activity, but in many cases, it also plays a key role in sustainable forest management. Forests can only be sustainably managed if balanced populations of wildlife are maintained. This is particularly true for herbivores, such as deer. If left to multiply unchecked, deer will eat the entire next generation of understory plants in a given area. If generations of new seedlings are lost, the forest soon loses its ability to renew itself following disturbances.

## **Fishing**

Clear Creek and Callen Run in northern Jefferson County and Maple Creek in southern Forest County are popular trout streams within the State Forest and are heavily fished. A number of area streams support native brook trout populations. Those within or near the State Forest in Jefferson County include Pine Run, Dice Run, Clear Run, Hetrick Run, and Mammy Hi Run. At the Kennerdell Tract, brook trout reproduce naturally in Dennison Run. It is not stocked and gets moderate use by individuals who enjoy fishing.

## **Birding/ Nature Observation**

Bird watching, and nature observation are uses that occur throughout the 2.1 million acres of state forest land. The best locations for these activities depend on the habitat requirements of the species involved. The Audubon Society has designated certain areas of state forest land with unique or unusual bird species as Important Bird Areas. These parts of the state forest have particularly large and unique habitats for some unusual bird species. Most state forest lands have diverse habitats and support great numbers of birds. More information on important bird areas can be found at [www.audubon.org/bird/iba](http://www.audubon.org/bird/iba)

State forest land with its many roads and trails and generally quiet environment is ideal for nature observation. A public use map of the roads and trails is available from each district to aid nature observers. Natural Areas and Wild Areas are managed with this objective in mind, but the entire state forest system is maintained in a largely natural system. Nature photographers and artists also find an abundance of natural settings on state forest land.

The local chapter of the Audubon Society, the Seneca Rocks chapter, did a bird survey at the Clear Creek State Forest in mid-May of 2005. They found 84 species of birds without ever leaving the roads.

## **Species of Special Concern**

The National Resource Conservation Service (NRCS) has designated areas of the state as priority areas to do forestry practices on private lands to enhance habitat for certain Species of Special Concern. These include the Golden Winged Warbler and the Cerulean Warbler. Only a very small part of our Forest District is included in these target areas, so the program has had little impact on private landowners in our 7-county area. These programs are due to expire soon, and it is not known if they will be funded again in the future.

The PA Game Commission currently has funding for their Hunter Access Program. In exchange for a 10-year commitment from private landowners to open their land for some public hunting, the PGC will pay 100% of the cost for certain pre-approved practices on privately owned woodlands. This is available state-wide, including in our seven-county area. It is not known how much longer they will have funding for this program, but it is a valuable option for woodland owners for as long as it continues.

## **Deer Management**

Deer continue to be one of our biggest challenges to sustainable forest management in Pennsylvania. The goal is to balance the deer population with the available habitat. This is a very elusive, moving target, which varies from area to area, and changes over time, depending on many factors. It is hard to achieve this goal, and even harder to maintain it.

Historically high deer populations had decimated the understory of the woods across most of the state for decades. Realizing that something had to be done, the PA Game Commission introduced several measures in the early 2000's to bring the deer herd into better balance with the habitat. These included concurrent buck/doe seasons for rifle season, increased antlerless tag allocations for much of the state, and Deer Management Assistance Program (DMAP) tags for private landowners, including State Forest lands. DMAP tags are additional antlerless tags that landowners can apply for based on acreage owned.

These tools were effective, and the forest did start to recover in health, with tree seedlings surviving to grow into saplings in some areas. With the deer population in better balance with the available food supply for the past decade, we have seen significant improvement in tree seedling survival in some areas, on both public and private lands in our Forest District.

However, we are seeing an increase in population on the Clear Creek State Forest. We do not yet know how much impact the increased population will have on the areas that did start to recover. However, the areas that were not able to grow seedlings into saplings during the time of lower deer density will certainly not be able to recover now that the numbers are back up. This is a great concern, especially on private woodlands. We can put deer exclosure fences around areas where we harvest timber on State Forest, but this is unrealistic for private woodland owners. The cost of building the fence is prohibitive, but the real challenge is to adequately maintain that fence for the 10 to 20 years required to successfully establish young trees that are safely above the reach of the deer. Also, since private woodland owners practice some form of uneven-aged management, they want to harvest timber periodically, perhaps every 15 years or so. Realistically, this means they would have to permanently fence their property, maintaining the fence forever. This cannot and will not happen for numerous reasons. The only realistic option is to balance the deer population with the food supply so that tree seedlings are able to grow on their own.

Another issue directly related to deer impact is that of non-native invasive plants. These plants inherit a competitive advantage over native plants because of “preferential browsing” by deer. Simply put, the deer like to eat most native plants, including most tree seedlings, but they don’t like most non-native plants. Since these non-natives don’t get eaten as much, or not at all, they are allowed to grow and reproduce, while the native plants are kept in check by hungry deer.

We have seen a dramatic increase in the spread of invasive plants in the past decade. They make it difficult or impossible for tree seedlings to grow in many areas. This is especially true on privately owned woodlands. It is simply not possible, or desirable, to attempt to use herbicide on the millions of acres of woods that is being overrun by these undesirable plants. Common ones in our Forest District include multi-flora rose, Japanese stiltgrass, Oriental bittersweet, and Japanese barberry. There are other species here and there, but these are the ones with the most wide-ranging impact at this time.

The spread of invasive plants, and the loss of desirable tree seedlings to deer are a difficult challenge for us, but private woodland owners don’t have the expertise or resources available that we do on State Forest lands. The future health and sustainability of many privately-owned woodlands across our Forest District is in serious question at this time. If private woodland owners continue to cut trees without growing new ones to replace them, the day will come when they simply run out of trees. The once proud Penn’s Woods could be reduced to a giant multi-flora rose patch. The Bureau’s challenge going forward is to try to prevent this from happening.

In 2018, a new deer-related challenge arrived on our State Forest at Clear Creek. Chronic Wasting Disease had been spreading around the state for about five years. In 2017 a new Disease Management Area was formed near our State Forest, in Jefferson County, south of Interstate 80. Based on another disease-positive deer found near Brookville, the DMA was then expanded to include our State Forest in the summer of 2018. If history holds true, all the DMA’s, including this one, will continue to expand as more positive deer are found. This will certainly complicate deer management in many ways. We will monitor the situation very closely and cooperate in whatever ways we can with the PGC and hunters to ensure that hunters continue to have a safe and enjoyable experience. We need hunters to assist us in our efforts to balance the deer population with the available food supply. We cannot afford to lose them and will do what we reasonably can to encourage them to make the Clear Creek State Forest the destination for their hunt. We are also concerned with the potential impact CWD may have on the deer/habitat balance on private lands in our Forest District. There are many unknowns about this issue, and we will also monitor this very closely. We have already started having

educational events for the public on CWD in September 2018 and will continue to do this in appropriate ways as new developments emerge.

### **Chronic Wasting Disease on DCNR Lands**

Chronic wasting disease (CWD) is an always fatal disease that affects the brain and nervous system of infected deer and elk.

It has been detected in Pennsylvania in both captive and free-ranging deer. Following these detections, the Pennsylvania Game Commission established Disease Management Areas (DMAs) to reduce the risk of spreading CWD to other parts of the state.

Three DMAs currently exist in Pennsylvania; however, newly confirmed cases can alter the boundaries. The current DMAs include: DMA 1 on a captive deer farm in Adams County in 2012 (DMA 1 has since been eliminated); DMA 2 includes multiple free-ranging deer in Bedford, Blair, Cambria, and Fulton counties, as well as captive deer farms in Bedford, Franklin, and Fulton counties; DMA 3 includes two captive deer farms in Jefferson County and a free-ranging deer in Clearfield County; and DMA 4 contain a captive deer at a facility in Lancaster County.

All or portions of the Michaux, Buchanan, Gallitzin, Tuscarora and Rothrock State Forests as well as several State Parks fall within DMA 2. A portion of Clear Creek State Forest is located within DMA 3 and William Penn State Forest is located within DMA 4.

Hunters who harvest deer within in a DMA should be aware that special [rules and regulations](#) apply and should have their deer tested for the disease. Additional information on Chronic Wasting Disease, testing, and [approved processors](#) can be found on the [Pennsylvania Game Commission website](#)

### **State Wildlife Action Plan**

Management of the state forest system is guided by the State Forest Resource Management Plan, which includes wildlife management goals to provide habitats for a wide variety of wildlife. The wildlife includes Species of Greatest Conservation Need (SGCN) identified in the Pennsylvania Wildlife Action Plan, which is administered by the Pennsylvania Game Commission and Pennsylvania Fish and Boat Commission. For planning purposes, the Pennsylvania Wildlife Action Plan has been used by the DCNR Bureau of Forestry to:

inform an implementation document for each forest district containing:

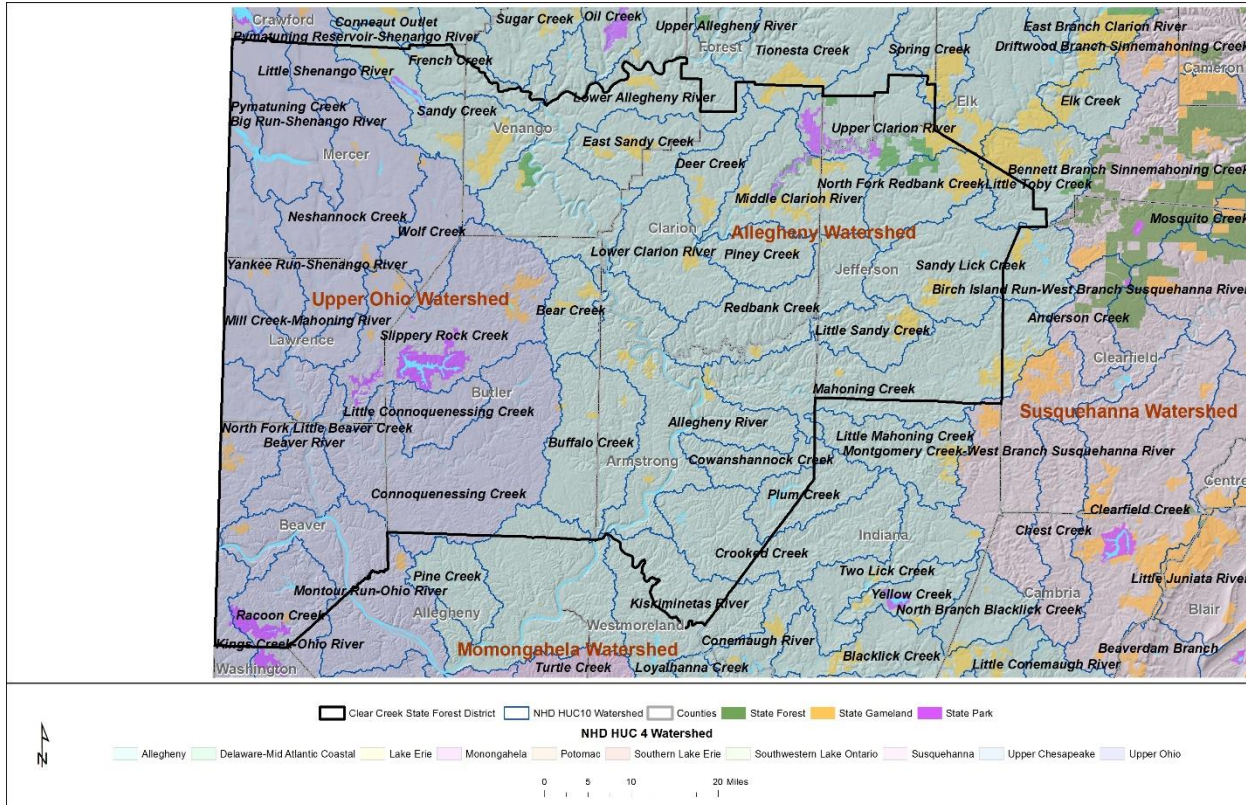
- o High priority SGCN known to occur in each forest district.
- o High priority SGCN that could potentially be found in each forest district.
- o Specific habitat types and characteristics where each species might be found.
- o General habitats management recommendations to support each species.
- o draft strategies for each forest district to protect, maintain, or enhance wildlife habitat features during forestry management activities.

Advancing from planning to implementation, these forest district documents are guiding management for SGCN. Thus, strategically associating the State Forest Resource Management Plan and Pennsylvania Wildlife Action Plan fosters coordinated resource management planning and implementation to benefit Pennsylvania's SGCN and state forest habitats.



## 11) Water

### a) Major Watersheds



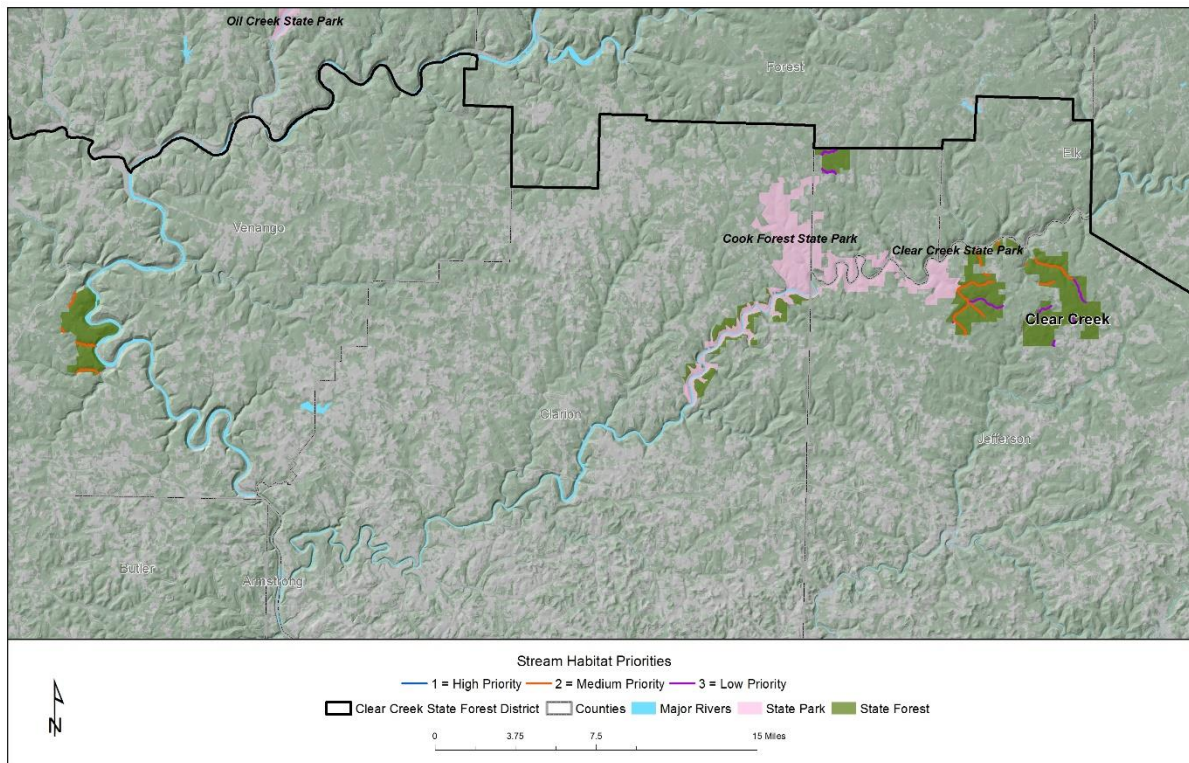
**Figure 11-1.** Map of major (Hydrologic Unit Code 4) and minor (Hydrologic Unit Code 8) watersheds within entire district.

The Clear Creek State Forest lies primarily within the Ohio Basin. No municipalities are dependent on the Clear Creek State Forest for their water supply at present, and future use is doubtful because of the remote location of the Forest. However, the Forest makes up much of the watershed for Clear Creek, which flows through a Clear Creek State Park. An impoundment on this creek is presently being used as a swimming area in the park.

Water rights along Callen Run for 1,000 feet upstream from the State Forest boundary line crossing the Callen Run Road are deeded to the United Natural Gas Co., now the National Fuel Gas Supply Corp. This company has a small impoundment on Callen Run within the State Forest and uses the water in the operation of their Heath Pump Station.

A small portion of southern Jefferson County falls within the Susquehanna Watershed; which flows into the Chesapeake Bay. The rest of the District falls within the Upper Ohio and Allegheny Watersheds; which ultimately flow into the Ohio River Basin. Two major rivers flow through the District that include the Allegheny and Clarion River. The Clarion is denoted as a wild and scenic river and is the “River of the Year” for 2019 and the Allegheny was the “River of the Year” in 2017.

## b) Major municipal supplies



**Figure 11-2.** Streams within the district prioritized for aquatic habitat improvement projects based on PFBC Stream Habitat Improvement Prioritization Tool.

No in-stream habitat improvement projects have been completed to date, but the District is open to possible projects that can increase the habitat in these streams. The District is looking at options to improve or modify an existing dam on Callen Run to allow trout movement while providing access for handicap fishing use.

## c) Fish and Boat Commission Stream Habitat Prioritization

Wildlife and fish habitat work is most efficient if it is prioritized to get the most benefit for the effort. To help the Bureau of Forestry effectively manage for fish habitat, the Pennsylvania Fish and Boat Commission (PFBC) has shared their Stream Priorities for Habitat Improvement tool. Prioritization in this tool is based primarily on trout biomass, Class A designation, and high angler use. Priority 1 streams are highest priority for habitat projects. The PFBC prioritization tool includes spatial data for use in GIS along with a spreadsheet of priority streams within the districts. This tool assists the decision-making process when determining what streams to emphasize for improvement. The highest priority streams should be emphasized for habitat work within a district. Priority 1 streams should be addressed first, then priority 2 streams. This tool can also aid in prioritizing Dirt and Gravel Roads projects within districts to provide increased benefit to the aquatic resources.

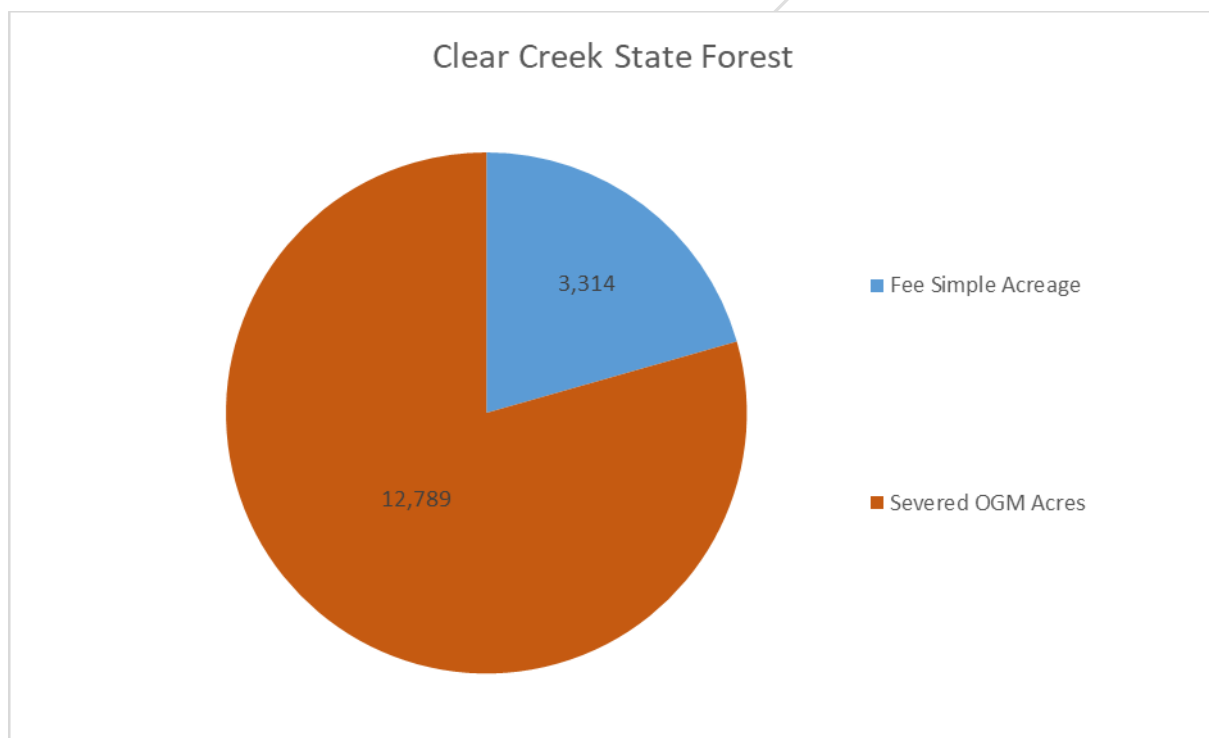
d) Acid Mine Drainage

Acid mine drainage (AMD) has contaminated many streams throughout the Clear Creek Forest District. The District works with the Department of Environmental Protection when these areas are identified to try and mitigate the issue.

e) River Islands

The District has 2 river islands that are located on the Allegheny River. The islands are not developed but they are open to explore and see the different flora and fauna that exist in that specific ecosystem.

12) Oil, Gas, and Mineral Resources



**Figure 12-1.** Acres of subsurface ownership/status on state forest land within the district. Acreage figures are derived from bureau GIS data, not acreages specified in lease or subsurface agreements. Severed Gas Rights Acres include only severed rights lands where the subsurface ownership has been verified. Partially severed areas that have been leased are counted as DCNR Issued Lease Acres, as opposed to Severed Gas Rights Acres.

A large number of gas and oil wells have been drilled on the state forest in all compartments. The wells in the northeastern part of the District range in depth from 1,700 feet to 3,100 feet deep and are extracting oil and gas from various Upper Devonian sandstones. The wells on the Allegheny River Tract located in Venango County are accessing the Upper Devonian Venango sandstones and range in depth from 400 feet to 1,100 feet deep.

Most of the oil has been extracted from these reserves leaving only a few active oil wells. There are approximately 100 active gas wells on State Forest lands in the District. There are many more wells that have been plugged or are no longer productive.

The Callen Run area in northeastern Jefferson County contains 3,200 acres of potential gas storage fields.

There are four active stone pits on the State Forest. Two sandstone pits are located in Jefferson County and two sandstone pits are located in Venango County. Three of the pits have been used for logging road construction and maintenance on State Forest Lands. National Fuel Gas Supply Corp. owns the mineral rights to the other pit and occasionally uses the stone for road maintenance. The mineral rights to the Stone pits in Venango County are owned by Charles Meyers.

With the exception of Compartment 9, where the Commonwealth has 1/8 ownership of seven active wells, the oil and gas rights on all other State Forest Lands in the District are privately owned. The hard minerals are also owned privately, on most of the State Forest.

There is potential for future natural gas extraction on the Clear Creek State forest from deep Ordovician-age formations and for the activation of the Gas storage field at Callen Run as the demand for natural gas increases. Currently Seneca has one Marcellus Well on the state forest that is drilled but not in production. At this time, we do not know what the future will bring for the development of this resource.

### **Shale Gas Monitoring and Guidelines**

The DCNR Bureau of Forestry's mission statement clearly identifies the environmentally sound utilization of mineral resources, which includes oil, gas, coal, and hard minerals as a key component of state forest management. Subsurface geological resources and unique geologic features on state forest lands are managed to provide long-term benefit to the citizens of the commonwealth while adhering to the principles of ecosystem management. Decisions regarding management of the subsurface estate must be based on the mission and both state-wide and district-level management plans. Oil and natural gas development is one of the management activities that historically has occurred on state forest land. The activity contributes significantly to Pennsylvania's economy and provides a source of domestic energy. Natural gas development, however, especially at the scale seen in the modern shale-gas era, can affect a variety of forest resources, uses, and values, such as:

- recreational opportunities,
- the forest's wild character and scenic beauty, and
- plant and wildlife habitat.

Given the host of potential impacts of shale-gas development to the state forest resources, uses, and values, the Bureau has established a Shale-Gas Monitoring Program to track, detect, and report on the beneficial and adverse impacts of the activity. The program aims to provide objective and credible information to the public and inform and improve shale-gas management efforts. An essential function of the Shale-Gas Monitoring Program is to regularly compile and analyze its data and findings. The Program has produced two reports on its monitoring efforts. Information on the Shale-Gas Monitoring Program can be found here:



<https://www.dcnr.pa.gov/Conservation/ForestsAndTrees/NaturalGasDrillingImpact/ShaleGasMonitoring/Pages/default.aspx>

To assist the Bureau with managing oil and gas development in concert with other forest resources, uses, and values, the Bureau has created the Guidelines for Administering Oil and Gas Activity on State Forest Lands. The objective of this document is to communicate a set of “guidelines” and Best Management Practices (BMPs) that provide consistent, reasonable, and appropriate direction for managing oil and gas activity on state forest lands in accordance with the Bureau’s mission. The Guidelines can be found here:

[http://www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr\\_20032134.pdf](http://www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr_20032134.pdf)

## 13) Wildland Fire

### a) Wildfire Suppression

The Clear Creek state Forest is divided in two divisions. The East (Clarion, Jefferson, Armstrong and ½ Venango counties) and the West (Beaver, Butler, Lawrence, Mercer counties). In each division, there is a Fire Forester who is responsible for their own division and wildfire operations within. Each division is equipped with a brush truck which meets the national Type 6 standard for fire engines. The fire foresters are responsible for prevention, suppression and investigation in their respective areas. The entire staff is trained with the basic training required by the Division of Forest Fire Protection and some of the staff continues advancement in wildfire training opportunities, including pump, chainsaws, and leadership.

When the fire season is in effect, the fire foresters are assisted by the rest of the staff based on the staffing guidelines. Staffing is dependent on the Wildfire Danger Rating for the day.

In addition to the brush trucks, a Fire Tool supply cache is maintained at the Clarion District office. the cache includes, hand tools (shovels, rakes, combi tools, pulaskis, axes), a supply of fire hose to supplement the district needs, and three wildfire pump kits which are utilized for hose lays when access to the fire is limited and/or large amounts of water are need for supplying apparatus on the fire. These kits and entire supply cache are inventories and the pumps run each year, prior to the spring fire season and then winterized following the fall season.

### Major suppression efforts

There have been two large fire incidents in recent year, one being the Snake Run Fire which was in Lawrence County and totaled 106 acres in 2013 and the Henderson Station fire in Mercer County which totaled 47 acres in 2016. While many fires are kept to a smaller size due to the timely response by local fire departments, each fire is treated the same as far as cause determination and investigation.

### b) Prescribed Fire

Prescribed fire is used for several reasons within the Clear Creek State Forest. When used in the forest, it is used to control competing vegetation in oak stands, to reduce the non-desirable vegetation such as mountain laurel and birch to promote the growth of more desirable species, such as oak. Often the USFS has research and study areas in which we implement Prescribed Fire.

Another reason prescribed fire is utilized in the district, is to reduce invasive species to promote the growth the growth of wildlife habitat. This technique is implemented when we conduct burns at M.K. Goddard State Park and at the Kennerdell Tract of state forest. Warm season grasses are best renewed by a 4-5 burn cycle to lower thatch and prepare a new seed bed.

## 14)    Infrastructure and Maintenance

Infrastructure refers to buildings, equipment, roads, and other capital assets, tools, and resources used to meet an organization’s goals and objectives. Successful accomplishment of the bureau’s mission cannot happen without proper inventory, planning, and administration of these assets. The bureau uses infrastructure to perform management activities and to provide for state forest use by others, including private industry and the general public. This requires accurate inventories, acquisitions, management, evaluation, maintenance, and retirement of infrastructure, as well as adequate funding to make all of these tasks possible.

Bureau staff manage the following infrastructure on Clear Creek State Forest.

- Roads

| Road Category            | Total Miles |
|--------------------------|-------------|
| Z1 - Public Use Road     | 21          |
| Z2 - Drivable Trail      | 1           |
| Z3 - Administrative Road | 49          |
| Total                    | 71          |

**Table 14-1.**

The District has 21 miles of Public Use Roads that are open year around to the public. We have a yearly road maintenance program and try to use Dirt and Gravel Funds or Liquid Fuels Funding when we can to improve the overall quality of the road and the impact to local waterways.

- Trails

| Trail Category | Total Miles |
|----------------|-------------|
| Shared Use     | 30          |
| Hiking Only    | 19          |
|                |             |
| Total          | 49          |

**Table 14-2.**

The District has 49 miles of trails with two National Trails traversing the Clear Creek State Forest and they are the North Country Trail and the Baker Trail.



- Gates
  - The District has approximately 70 Gates
- Bridges
  - The District has 3 major Bridges
- Fire towers
  - The District has one fire tower still standing that will be taken down
- Buildings
  - The District has 2 office buildings and 6 storage buildings
- Camping sites
  - The District has 7 campsites along the Allegheny River
  - The District has 4 motorized Campsites
- Boundary line
  - The District has 6 Tracts of State Forest Land and many of miles of Boundary Line
- Rights-of-way
  - The District does not own the majority of the subsurface rights which means that there are many miles of gas line – some of these are transmission lines and some of these are feeder lines
- Parking lots
  - The District has approximately 25 parking lots
- Dams
  - The District has 1 Dam
- Leased camps
  - The District has 12 Leased Camps
- Deer exclosures
  - The District has 50 fences totaling 44.2 miles
- Restrooms/latrines/etc.
  - The District has 2 – 2-person pit toilets
- Vistas
  - The District has 3 Vistas
- Kiosks
  - The District has approximately 10 kiosks
- IT Resources
  - The District has 17 computers
- Vehicles
  - The District has 18 vehicles and 3 trailers
- Stream Culverts

The Bureau of Forestry conducts stream culvert assessments using the North Atlantic Aquatic Connectivity Collaborative (NAACC) protocol. Assessed culverts yield data on the condition of stream crossings on state forest land in regard to AOP. The data is used to determine if the crossing is a barrier to organism passage, and if so, to what extent. This information assists the bureau prioritize culverts for replacement or repair. The end goal is for the road to not impact the stream. The following is a list of priorities to consider when replacing stream crossings, from highest to lowest priority.

## Priorities for Culvert Replacement

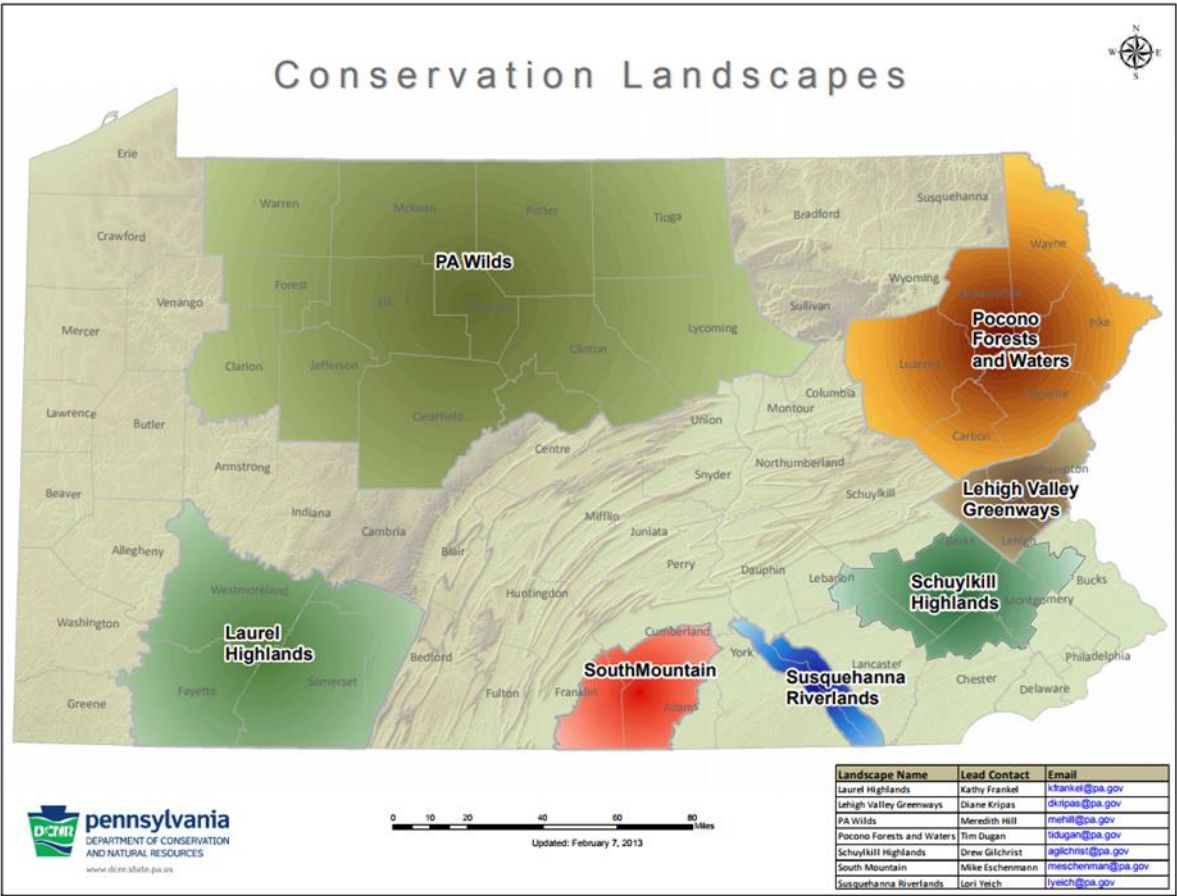
1. Failing critical infrastructure
2. Assessed as no aquatic organism passage (AOP)
  1. Class A brook trout streams
  2. Exceptional Value (EV) streams
  3. Wild brook trout streams
  4. High Quality (HQ) streams
5. PA Fish and Boat Commission Stream Priority 1 for habitat improvement
6. NAACC priority tool (length of stream reconnected)

This District has approximately 27 culverts, which will be assessed over time using the NAACC protocol.

15)Special Designations

a) Conservation Landscapes

Throughout Pennsylvania, seven large regions are working together to drive strategic investment and actions around sustainability, conservation, community revitalization, and recreational projects. Known as conservation landscapes (Figure 15-1), these collaborations are found in regions where there are strong natural assets, local readiness and buy-in, and state-level investment and support. Founded on the regions’ sense of place and resource values, conservation landscapes motivate citizens and elected officials to take on the challenge of effective land use planning, investment, civic engagement, and revitalization.



**Figure 15-1:** The seven Conservation Landscapes in Pennsylvania. The Pennsylvania Wilds is situated in the northcentral part of the state.

Driven by the values of conservation, sustainability, and community revitalization, DCNR’s Conservation Landscapes are built on several ingredients:

- Presence of DCNR-owned lands -- Large blocks of state parks and forests provide the foundation for the landscape and a staffing presence

- Sense of place -- Regions with a sense of place and identity in many cases are based on shared landscape not political boundaries
- Readiness -- Often driven by opportunity or threats such as changes in the economic base, depopulation, or sprawl
- Engagement -- Civic engagement process that brings people of the region together to identify common values and concerns
- Strategic investments -- State agencies with regional and statewide partners provide high-level leadership, financial support, and technical assistance to build better communities, to conserve identified values and to invest in “sustainable” economic development

There are currently seven conservation landscape partnerships within Pennsylvania, and the Clear Creek State Forest is within the Pennsylvania Wilds Conservation Landscape. There are 12 counties in the PA Wilds, and Clear Creek State Forest is situated on the western side of the PA Wilds.

The Pennsylvania Wilds heralds the significant outdoor experiences and rural community character found in a 12-county region in northcentral and northwestern Pennsylvania. The Pennsylvania Wilds Conservation Landscape offers:

- Tremendous outdoor adventures
- Abundant wildlife
- Hundreds of miles of land and water trails
- Rich lumber and oil history
- Charming small towns
- “Authentic” experiences

For more than a decade, the partners in the area have worked to:

- Ensure stewardship of the public lands and character of the region’s communities
- Support and grow private businesses such as accommodations, services, and locally-made products
- Promote the renewal of the region’s communities and appropriate community planning
- Invest in public infrastructure to enhance the visitor experience

More information about the PA Wilds Conservation Landscape can be found here: <http://pawilds.com/>.

The Pennsylvania Wilds has been guided by a group of 40 organizations representing federal, state, and county government; tourism and cultural interests; education, economic development and the private sector.

## b) Wild & Natural Areas Definitions

The objective of a natural area is to protect areas of scenic, historic, geologic or ecological significance, which will remain in an undisturbed state, with development and maintenance being limited to that required for health and safety. Natural areas are set aside to provide locations for scientific observation of natural systems, to protect examples of typical and unique plant and animal communities, and to protect outstanding examples of natural interest and beauty. Natural areas are maintained in a natural condition by allowing physical and biological processes to operate, usually without direct human intervention. Any unique or unusual biologic, geologic or historic areas can be considered for designation as natural areas. In addition to the 'unique' or 'unusual,' representative examples of all major forest types occurring in this Commonwealth were also included in the proposed natural area system. The size of these areas is generally small but may be as large as several thousand acres.

The objective of wild areas is to set aside certain areas of land where development or disturbance of permanent nature will be prohibited, thereby preserving the wild character of the area. In Pennsylvania's state forest system, certain areas that retain an undeveloped, wild character are designated as Wild Areas to assure that this primitive character is perpetuated. A wild area is defined as an extensive area which the general public will be permitted to see, use and enjoy for such activities as hiking, hunting, fishing, and the pursuit of peace and solitude. Development of a permanent nature will not be permitted so as to retain the undeveloped character of the area. Because of the restrictions imposed on wild areas, careful consideration must be given to alternative uses before additional areas are so designated. The size of the area should be no less than 3,000 acres and seldom more than 15,000 acres. They should be located where there are few public roads or other human-made developments such as campsites, rights-of-way, etc. Only areas where the department owns sufficient subsurface rights to preclude development will be considered.

## c) High Conservation Value Forests

Pennsylvania state forests are certified under the Forest Stewardship Council (FSC) standards. FSC certification prioritizes the protection of particularly valuable forest characteristics by requiring certified landowners to identify high conservation value forests (HCVFs) on their land and plan for sustainable management and monitoring of these areas. FSC recognizes six types of HCVFs:

- HCV 1: HCV forest areas that contain globally, regionally, or nationally significant concentrations of biodiversity values (protected areas, rare or threatened species, endemic species, and seasonal concentrations of species)
- HCV 2: Globally, regionally, or nationally significant large landscape-level forests
- HCV 3: Forest areas that are in or contain rare, threatened, or endangered ecosystems
- HCV 4: Forest areas that provide basic services of nature in critical situations (protection of watersheds and protection against erosion and destructive fire)
- HCV 5: Forest areas fundamental to meeting basic needs of local communities
- HCV 6: Forest areas critical to local communities' traditional cultural identity

In 2011, the bureau followed FSC's HCVF guidance to identify, designate, and manage for areas of high conservation value. The areas which have been identified as HCVFs are managed in a manner that will maintain and/or enhance the values for which they have been designated and conversion of forest land to a "non-forested use" is prohibited.

Sub-categories of HCVFs occurring on state forest land are as follows:

- **1.1:** areas legally protected or managed primarily for concentrations of biodiversity values that are significant at the ecoregion or larger scale

- **1.2:** areas with significant concentrations of rare, threatened or endangered species or rare ecological communities, endemic
- **2.1:** significant large landscape-scale forest where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance
- **2.2:** areas significant to biodiversity conservation at the ecoregion scale because it contains landscape-scale biodiversity values that are not present on other forests due to landscape-scale habitat modifications on surrounding lands
- **3.1:** old growth stands
- **3.2:** roadless area >500 acres in size or that has unique roadless area characteristics
- **3.3:** rare, threatened, or endangered ecosystem
- **4.1:** areas providing a source of community drinking water
- **4.2:** areas protecting community drinking water supplies
- **4.3:** extensive floodplain or wetland forests that are critical to mediating flooding or in controlling stream flow regulation and water quality
- **6.2:** areas with cultural features created intentionally by humans

More information about HCVFs can be found in the LMU descriptions of this plan and in the SFRMP, p. 64.

**Table 15-1. Acres of High Conservation Value Forest by category.** To comply with Principle 9 of the FSC U.S. Forest Management Standards, the bureau evaluated and assessed areas for inclusion as HCVFs. While the BOF believes that all state forest lands are of highest conservation value, areas not designated as such are still of equal importance and are protected through law and best management practices. The areas which have been identified as HCVFs are mapped and managed in a manner that will maintain and/or enhance the values for which they have been designated. More information about HCVFs can be found in the SFRMP, p. 64.

| HCVF Category   | Acres |
|---|-------|
| 1.1, areas legally protected or managed primarily for concentrations of biodiversity values that are significant at the ecoregion or larger scale | 868   |
| 1.2, areas with significant concentrations of rare, threatened or endangered species or rare ecological communities, endemic                      | 868   |
| 4.1, areas providing a source of community drinking water   | 3     |
| 6.2, areas with cultural features created intentionally by humans   | 10    |

The District currently has one HCVF area on the Clear Creek State Forest. This area contains important ecological communities and high-quality streams that we try to perpetuate through our management approach.



#### d) Core Forest Index

As described in the 2016 State Forest Resource Management Plan, the purpose of Core Forest Focus Areas (i.e. LMUs within the top 20% of core forest index scores) is to assist in the inventory, management, maintenance, and monitoring of the most significant core forest tracts in the state forest system and to conserve the ecological values associated with interior forest conditions and unfragmented landscapes.

While the Bureau of Forestry manages for these values across the entire state forest system, Core Forest Focus Areas will serve as a means to ensure the appropriate balancing of these values in landscape-level forest management decisions. As such, special management guidelines will apply to these Core Forest Focus Areas. The following preliminary guidelines will guide the development of expanded management guidelines during the planning cycle.

##### **Preliminary Guidelines**

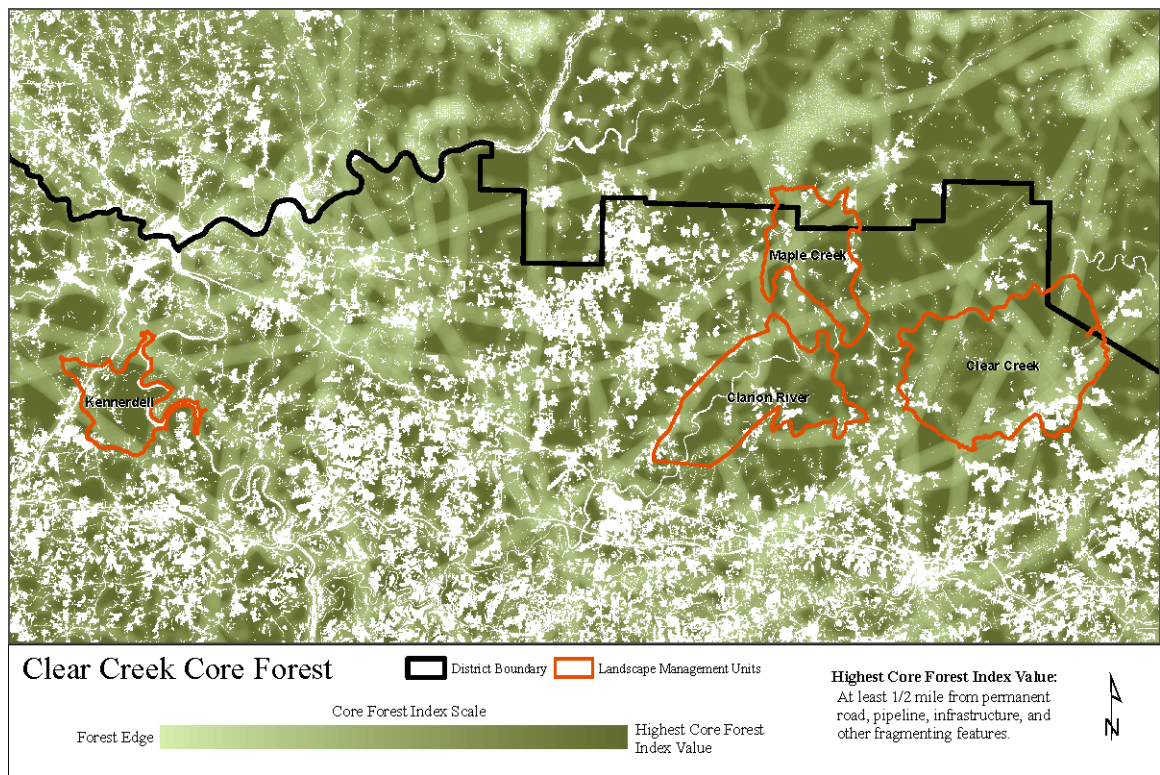
1. No permanent conversion of forest land will occur in these areas, including roads, pipelines, recreational parking lots, natural gas infrastructure pads, and other activities that permanently convert forest to non-forest.
2. The most restrictive, underlying Management Zones still apply in Core Forest Focus Areas. Wild and Natural Area guidelines apply in designated areas. Timber harvesting and other active management that does not involve permanent conversation is allowed per Management Zoning.
3. The temporary disturbances associated with timber harvesting and other forms of habitat management are allowed per state forest Management Zoning. Special consideration should be given in Core Forest Focus Areas to reducing the amount of haul roads, ensuring appropriate restoration, and maintaining closed canopy conditions in haul road corridors.
4. Where the Bureau of Forestry does not own mineral rights beneath Core Forest Focus Areas, it will work cooperatively with operators to avoid forest conversion.
5. When possible, the Bureau of Forestry will strategically purchase and/or exchange real estate interests to protect Core Forest Focus Areas where mineral rights are currently severed.
6. The Bureau of Forestry will consider, when available, acquiring key tracts that ensure connectivity of and expand and protect existing Core Forest Focus Areas.
7. The Bureau of Forestry will continually monitor the status of Core Forest Focus Areas. Deviation from these guidelines requires a State Forest Environmental Review and state forester approval.
8. The Bureau of Forestry will identify regionally important core forest Landscape Management Units. In these identified landscapes, long-term management goals and conditions will emphasize the promotion core forest conditions. When balancing uses and values in these landscapes, management decisions and plans will favor the promotion of these values.

The core forest analysis was based on the density of fragmenting features within a given area, which includes roads, pipelines, well pads, certain large rivers (large enough to show up on NLCD), etc. Based on fragmentation of an LMU, each LMU was given an index score between 0-100, representing the density of fragmenting features with a higher score representing a less fragmented area. As expected, all of state forest land across the state scored very high relative to more

developed areas of the state. Because the scores were very similar, a rank/percentile was assigned to each LMU based on their Core Forest Index relative to all other LMUs.

| LMU Name      | Statewide Percentile | Core Forest Index Value |
|---------------|----------------------|-------------------------|
| Clarion River | 97%                  | 98.58                   |
| Maple Creek   | 63%                  | 95.84                   |
| Kennerdell    | 36%                  | 94.08                   |
| Clear Creek   | 33%                  | 93.73                   |

**Table 15-2.** Core forest index value for state forest land in this forest district by LMU. The core forest index is a rating value out of 100 that expresses the proportion of the area within the LMU that is increasingly far away from dense areas of fragmenting features. The yellow highlighted LMUs are Core Forest Focus Areas (i.e. LMUs within the top 20% of core forest index scores state-wide).



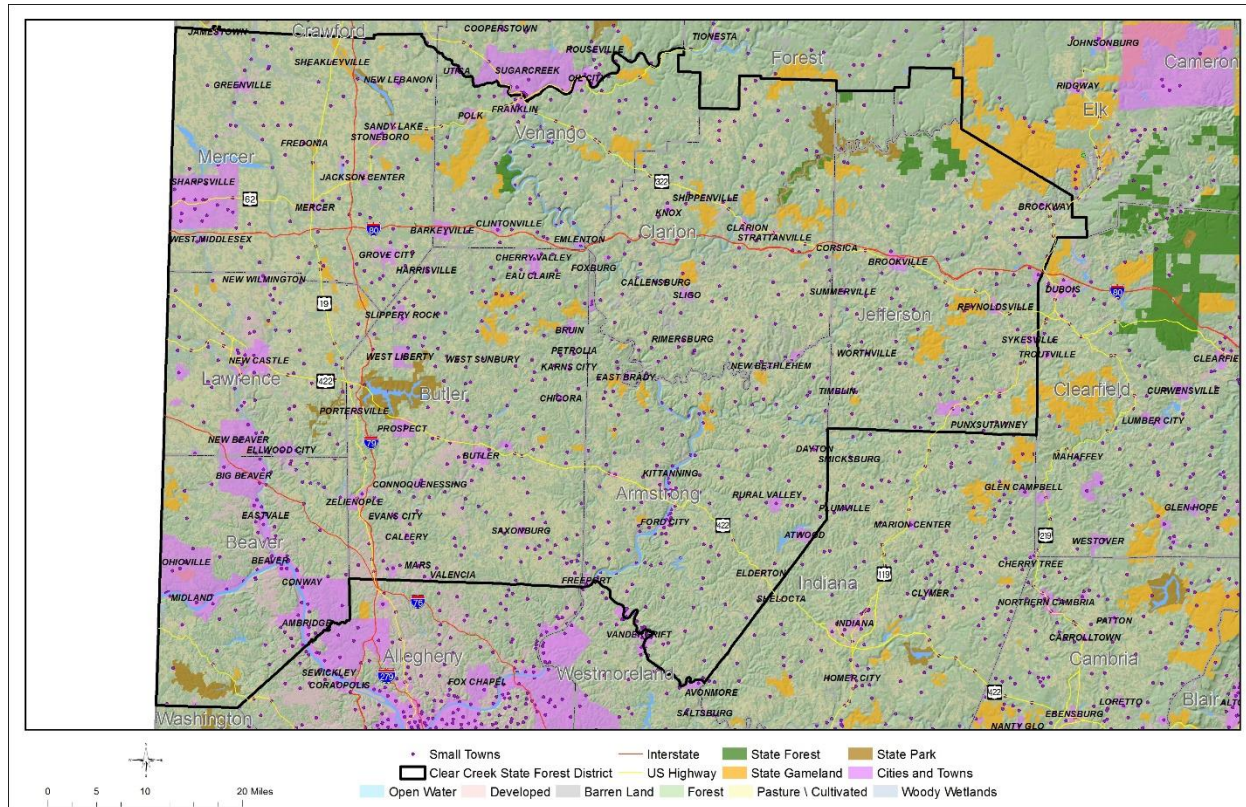
**Figure 15-2.** Map of core forest index in the region of Clear Creek Forest District.

In order to address Core Forest, Fragmentation, and Connectivity Objective 1.5 (pg. 38, SFRMP 2016), the top 20% of LMUs in terms of core forest index received the standard Core Forest Priority Goal as one of their LMU goals. Goals were kept intentionally broad so that they apply across SFL. Districts could further tailor the goal to address their specific plans for any Core Forest-related values in the LMU. For more discussion of Core Forest focus areas (LMUs) see the 2016 SFRMP, pgs. 34-38.

### e) Wild Plant Sanctuary

The District has one wild plant sanctuary. This area is in within the Kennerdell LMU and is important due to the plant communities that exist in the low fertile river bottoms.

## 16) Ownership and Population Centers



**Figure 16-1.** Map of public lands, population centers, and land use types (aggregated from National Land Cover Database).

The majority of the population within the District is located in the western half; while the majority of state forest land is located in the eastern half. The population percentage by county within the District is as follows:

Beaver – 25%

Butler – 23%

Mercer – 15%

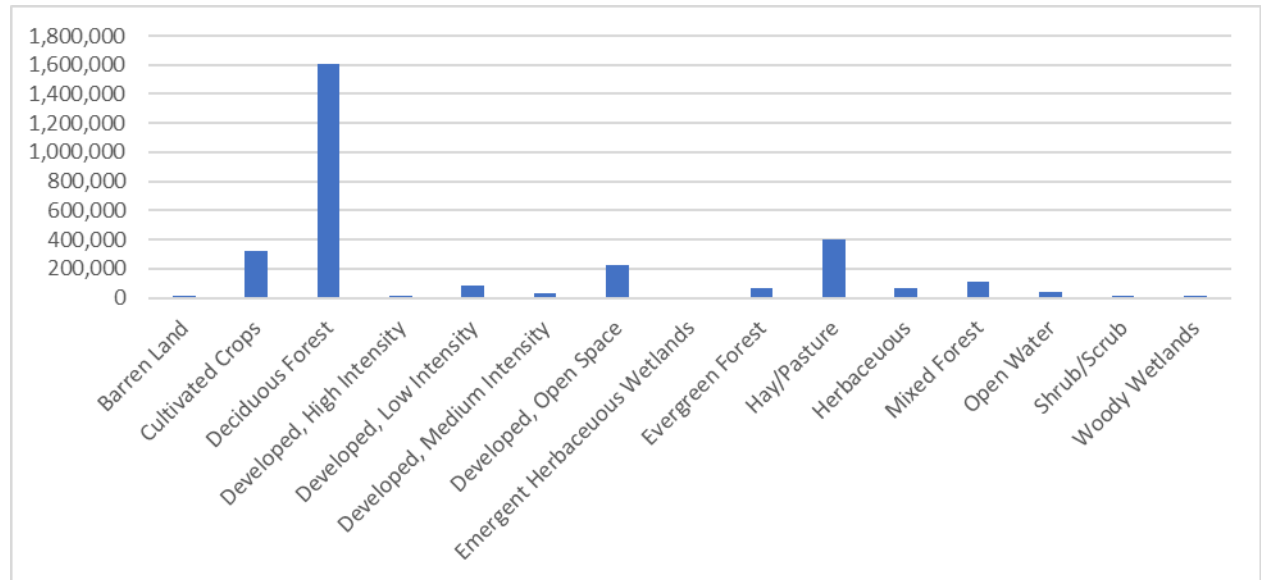
Lawrence – 12 %

Armstrong – 9 %

Jefferson – 6 %

Clarion – 5%

Venango – 4%

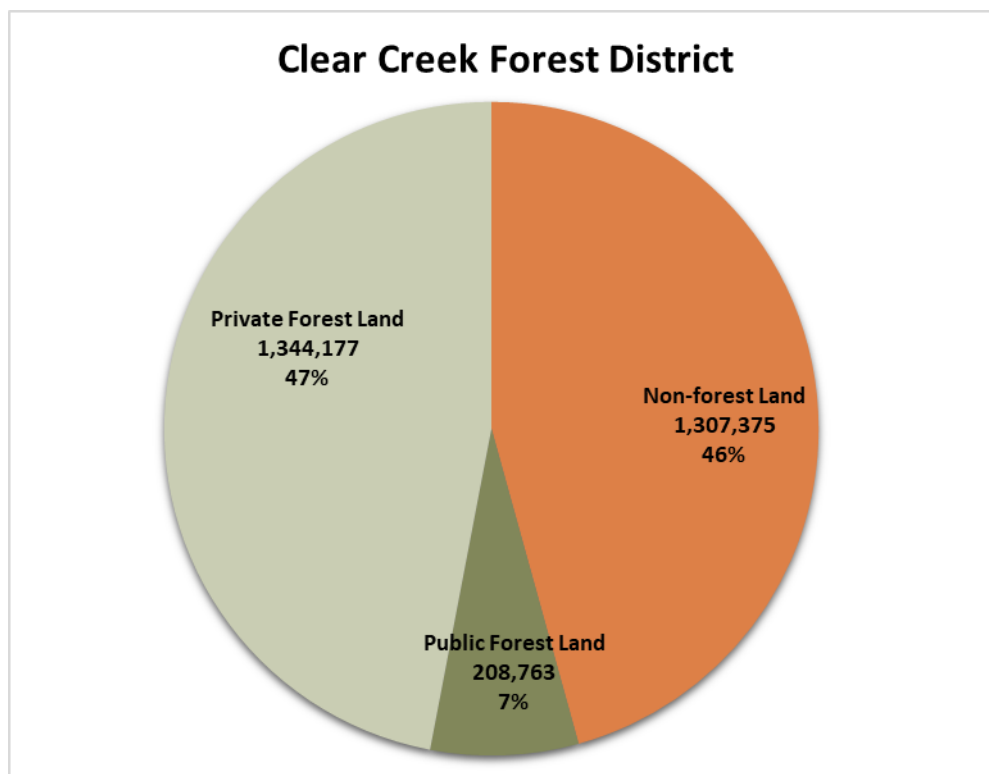


**Figure 16-2.** Acres of land cover types from National Land Cover Database for entire district.

The Clear Creek Forest District covers such a vast area and differing topography that all different types of land cover can be found within the District. Deciduous forests make up the large majority of the District, but the flora and fauna are unique due to the Allegheny and Clarion rivers flowing through the District.

If you travel from east to west, you will see vast tracts of forested land, reverting strip mines, swamps and farmland with small wooded areas that were not ideal for agriculture. Within that range you will also notice the urban/suburban areas increase; as you get closer to Pittsburgh and Youngstown.

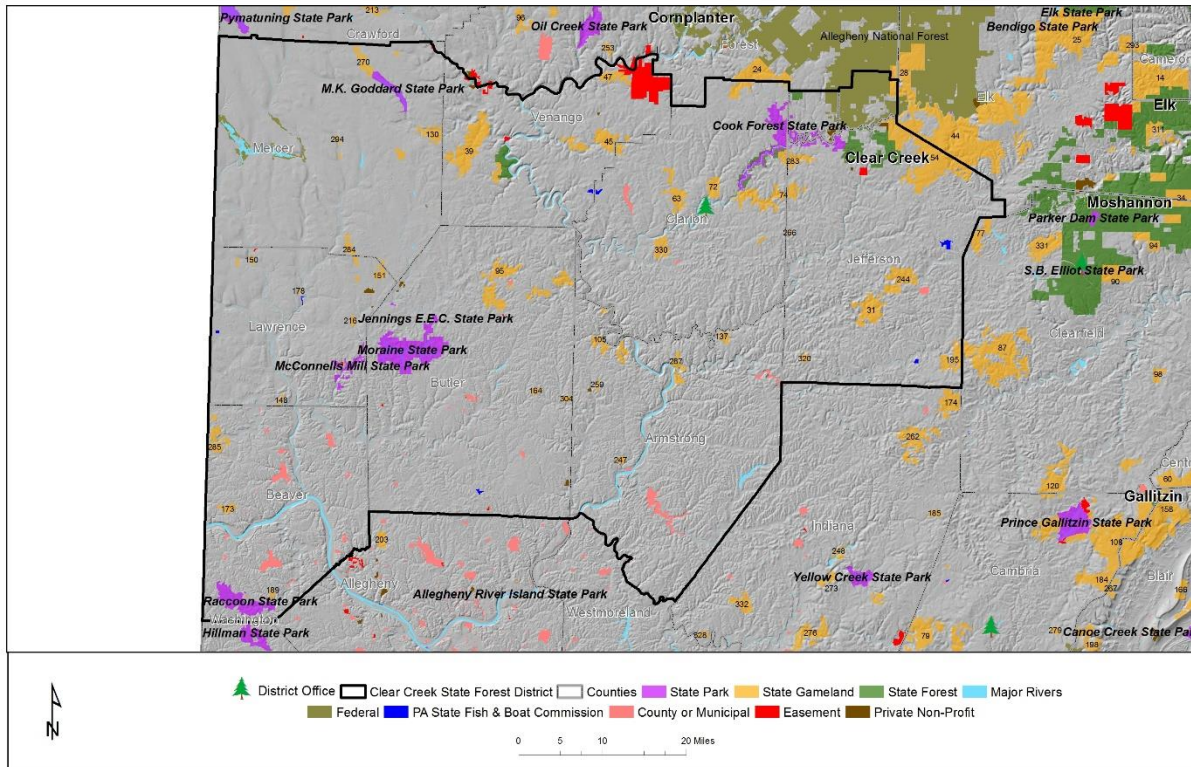




**Figure 16-3.** Percentage of total acreage within Clear Creek Forest District that is forested vs. non-forested and the ownership breakdown of the forestland (public vs. private), (based on US Forest Service FIA plot data: <https://www.fia.fs.fed.us/>).

The Clear Creek Forest District is almost evenly split between forest and non-forest. The counties of Venango, Northern Mercer, Jefferson, and Clarion have a large amount of forested land. Beaver, Butler, and Lawrence have a mix of farmland, forested land, and suburban developed areas due to their proximity to Pittsburgh. Armstrong has a mix between agriculture and forest land.

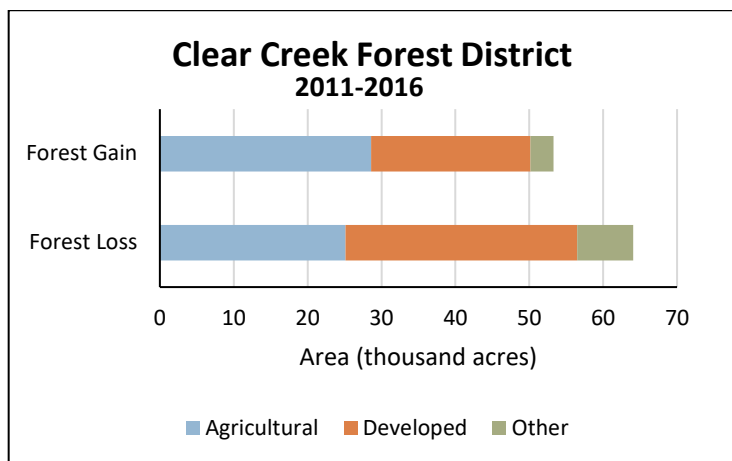
Public forest land within the District includes ownership by the Pennsylvania Game Commission, DCNR Bureau of State Parks, DCNR Bureau of Forestry and Allegheny National Forest.



**Figure 16-4.** Public lands conserved within entire district.

Most of the forest land in the district is owned by private non-commercial landowners but there are large tracts of forestland which are open to the public that include state parks, state game lands, Allegheny National Forest, Army Corps of Engineers, commercial timber companies, and the Clear Creek State Forest.

| Clear Creek District   |                 |
|------------------------|-----------------|
| Land Ownership Type    | Acres           |
| State Forest           | 16103.25        |
| State Parks            | 42586.8         |
| State Gamelands        | 103336.9        |
| Federal                | 34418.59        |
| Local/Municipal        | 2666.22         |
| Conservation Easements | 25538.57        |
| <b>Total Acres</b>     | <b>224650.3</b> |



**Figure 16-5.** Gross forest loss and forest gain 2011-2016 (based on US Forest Service FIA plot data: <https://www.fia.fs.fed.us/>) by land-use categories within Clear Creek Forest District.

The forest land gain and loss within the District, is similar to the statewide trend. The District is gaining forestland due to strip mine reclamation and reverting agriculture land while losing forest land to development. There is a high importance placed on conserving forest land due to the loss of forest land progressing faster than the gain, within the District.

The US Forest Service Forest Inventory and Analysis (FIA) program characterizes the areas of the State using several use categories which are generalized to the following broad classes: forest, agriculture (including pasture and cropland), developed land (including residential and commercial areas, and rights-of-way), water, and other non-forest land. Estimates for land use are produced from all measured plots in an inventory cycle (i.e. these estimates are based on plot expansions, not on a cell by cell analysis of landcover, as in the NLCD shown in various maps in this document). However, these data can be useful in understanding land-use changes dynamics, which allows land managers to make informed policy decisions. The categories in forest gain represent the type of land cover FROM WHICH the forestland came (e.g. agricultural could be an old farm field that gained enough tree cover in that period to now be classified as forest). Similarly, colors in forest loss represent the categories TO WHICH forestland was converted (e.g. agricultural could be a forest that was cut and converted to pasture). To read more about this nationwide forest inventory program, visit <https://www.fia.fs.fed.us/>

## 17) Economy and Forest Products

The Pennsylvania Department of Conservation and Natural Resources, Bureau of Forestry (BOF), along with its partners, led an effort to gain information that reflects the current characteristics of the wood products industry in the state. In 2013, the Bureau of Forestry conducted a Timber Product Output (TPO) survey among Pennsylvania's primary wood processing facilities, collecting information from the 2012 production year and again in 2017, to gather information on the 2016 production year. The survey was reinstituted in order to gain insight into volumes, species, uses, products and origins of the wood harvested and processed in PA, as well as information about the facilities operating in PA (employment, age, functions, etc.). The survey process also provided an opportunity for BOF foresters to interact directly with the private facilities located in their districts and enhance vital professional relationships. The survey information can be used by land owners, wood-



processing businesses, and other interested parties to plan and adapt to the needs and current condition of the market. In addition, the data collected from such surveys contributes to broader datasets that could be used in long-term trend analysis and assessments of regional dynamics.

More information on the wood products industry in PA, as well as reports from the Pennsylvania Timber Products Output Surveys can be found at: <https://www.dcnr.pa.gov/Business/ForestProducts/Pages/default.aspx>

The timber and wood manufacturing industry has a positive impact in the seven counties of our Forest District, but not as great as it used to be. The recession in 2008 was hard on the loggers, mills, and manufacturers. Some have survived, and some thrived, but others were not so fortunate.

In 2013 we conducted a Timber Products Output survey across the state. It was the first such survey we had done in many years. In 2013 we had a list of 39 mills in our Forest District. Twenty-three (59%) of these mills were willing to participate in the survey. In addition, there were numerous other, small mills in operation, mostly run by the Amish. Many of them did not wish to participate in our survey, so we did not get information from them. Based on the information we did get from the 23 mills, we can state the following, for the year 2012:

**Table 17-1:**

| County    | # Mills Reporting | Million Board Feet Processed In 2012 |
|-----------|-------------------|--------------------------------------|
| Jefferson | 10                | 7.7                                  |
| Clarion   | 9                 | 7.4                                  |
| Armstrong | 1                 | 5.2                                  |
| Butler    | 5                 | 4.9                                  |
| Beaver    | 0                 | ---                                  |
| Lawrence  | 4                 | 3.7                                  |
| Mercer    | 11                | 2.6                                  |

Statewide, about 250 mills reported their total production for 2012. They reported that they sawed about 650 million board feet of lumber and produced about 2.5 million tons of wood chips. They employed about 4400 people. Unfortunately, the survey results didn't give a breakdown by Forest District, so we don't know the total production for our seven-county area. Most of the timber statewide comes from the counties in the north-central part of the state, and most of the wood manufacturing facilities are in the south-eastern part of the state.

In the five years since the survey, some more mills have shut down. In addition, the market had shifted to a much larger percentage of exported logs, with most of them going to China. In the summer of 2018, that market slowed down because of the Trade War with China. We have no way of knowing where this trend will go, or how long it will last. Markets are always changing, and these changes continue to occur.

All in all, the revenues from timber sales are important to the woodland owners of our area, and the jobs are still an important part of our economy. However, the impact is not as large as it once was, and the future is uncertain.

We have an active timber sale program on our State Forest. Most of this land is in Jefferson County, with small parcels in Forest and Venango Counties. In total, we manage 16,526 acres. Since 2010, we have harvested a total of 10,495,000 board feet of timber from these lands. A significant percentage of this was high quality, high value red oak. The total value from executed contracts over the last eight years was \$6,325,968.00.

## 18) Recreation

The Clear Creek State Forest is made up primarily of 4 tracts of forested land. Each tract offers many diverse recreational opportunities. Listed below are several of the dominant recreational uses.

Clear Creek State Forest has roughly 60 miles of trails, primarily located in the Clear Creek tract in Jefferson County and the Kennerdell Tract in Venango County. These trails are designated as hiking only or shared use. The shared use trails can be used for hiking, biking, or horseback riding where designated. All the trails offer scenic views of our State Forest and range in all levels of difficulty.

Our State Forest offers several interesting sightseeing destinations. A few of the more notable in the Clear Creek Tract are the Beartown Rocks area and the Laurel Fields. Beartown Rocks is home to some of the largest rocks and boulders around. There are trails that meander through the rocks and allow you to look at some of Mother Nature's finest work. The Laurel Fields showcase the Pennsylvania State Flower. Originally home to the Tillotson family in the late 1800's, today the Laurel Fields comes to life every June for a magnificent display of mountain laurel. The one-mile auto loop gently winds through the heart of this area, allowing for optimal views of our State Flower.

Western Pennsylvania is home to some spectacular views. We have two vistas on State Forest Land that showcase some of the best views. Beartown Rocks Vista is in the Clear Creek Tract and provides a view of up to 25 miles of the scenic Allegheny Plateau. The Dennison Point Overlook is in the Kennerdell Tract. This vista can be reached from either the Kennerdell bridge or the State Game Lands No. 39 parking lot. Either approach offers a pleasant hike of about 1.6 miles, ending at Dennison Point Overlook high above the Allegheny River Valley.

A unique recreational opportunity is the Auto-Tour through the Clear Creek Tract. The nine-mile auto tour loop covers three points of interest and begins at the intersection of Rt. 949 and Corbett Road across from the Clear Creek State Park office. The points of interest include interpretive panels showcasing resource management activities, Beartown Rocks and the Laurel Fields.

A popular form of recreation on our State Forest is camping. Here in the Clear Creek State Forest, we have several options for campers. Primitive backpack camping is permitted along most trails and throughout the district, however a permit from the district office is required to stay more than one night at one site. Our State Forest also offers four motorized camping sites located along Clear Run Road, Spring Creek Road, and McNeil Station Road. These sites are designated with motorized camping signs. A third type of camping, group camping, is defined by the Bureau of Forestry as more than 10 people at the same site. This requires a Letter of Authorization or in some cases a Special Activities Agreement issued through the District Forester. Located in the Kennerdell Tract is the Danner Campground along the Allegheny River. This campground

offers fire rings and picnic tables for primitive and group campers. Camping guidelines should be referenced; if you have questions. There are currently 12 leased campsites on the Clear Creek State Forest. A colony area containing four camps is located along Burkett Road in compartment 8. Three camps are located in one corner of the Corbett fields in compartment 7. The remaining camps are widely scattered throughout the forest. The leasing of new campsites was suspended state-wide in 1970. The last new lease in our State Forest was in 1953.

Clear Creek State Forest offers a wide variety of opportunities for outdoor enthusiasts. All our State Forest Land is open to public hunting and fishing and is regulated by the Pennsylvania Game Commission and Fish and Boat Commission, respectively. Clear Creek offers a variety of both big and small game animals for hunting and trapping. We are also home to sections of the Allegheny and Clarion Rivers which are known for smallmouth bass, trout and walleye. There are also several small streams throughout the forest that are known for their trout including Dennison Run, Bullion Run, Callen Run, Maple Creek, and Clear Creek.

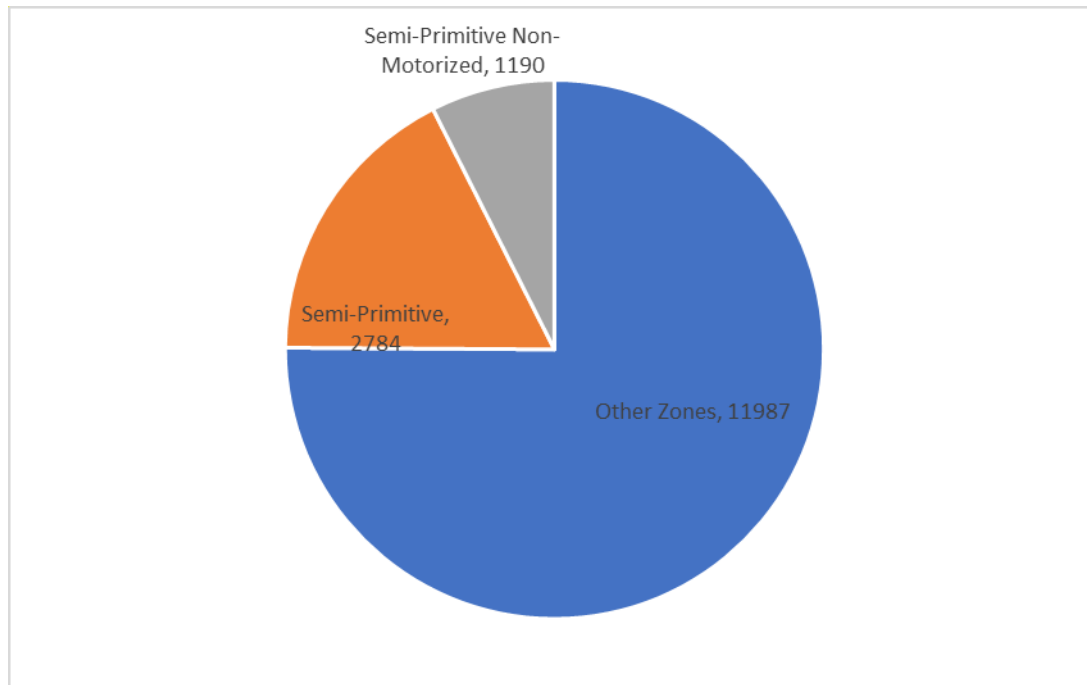
The Clear Creek Forest District has two extensive trails that pass through its boundaries, The Baker Trail and The North Country National Scenic Trail.

The Baker Trail is a 133-mile hiking and backpacking trail, following forest paths, old jeep trails, paved roads and dirt roads through woods, farmlands, and along rivers and creeks. The Baker Trail traverses six counties (Armstrong, Jefferson, Clarion, Indiana, Forest, and Westmoreland), is a state-designated hiking trail, and is included on the trails map of Pennsylvania. This trail has a number of Adirondack shelters located on side trails that offer through hikers' overnight accommodations.

The Baker Trail was established in 1950 and named for the late Pittsburgh attorney Horace Forbes Baker, who was instrumental in the re-establishment of the Pittsburgh Council of the American Youth Hostels after World War II. The trail originally extended from Aspinwall to Cook Forest State Park. However, extensive development along the Allegheny River caused the Aspinwall-Freeport section to be abandoned. In 1971, the trail was extended northward from Cook Forest Fire Tower to near the Allegheny National Forest.

The North Country National Scenic Trail, generally known as the North Country Trail, is a footpath stretching approximately 4,600 miles from Crown Point in eastern New York to Lake Sakakawea State Park in central North Dakota. Passing through the seven states of New York, Pennsylvania, Ohio, Michigan, Wisconsin, Minnesota, and North Dakota, it is the longest of the eleven National Scenic Trails authorized by Congress. As of early 2017, 3,009 miles of the trail is in place.

In Pennsylvania, the North Country Trail enters along the New York and Pennsylvania border above the Allegheny National Forest and travels in a southwest direction. As the trail makes its way through the Clear Creek Forest District, parts of the trail cross the Maple Creek Tract and the Clarion River Tract of our State Forest. In these sections of trail, two Adirondack shelters offer through hikers' overnight accommodations. As the trail exits State Forest Land, it continues through our District coverage area and into Ohio near State Game Lands 285 located in Beaver County.



**Figure 18-1.** Acres of state forest land in this district by Recreation Opportunity Spectrum (ROS) classifications (2012). ROS is an inventory system developed by the U.S. Forest Service, to characterize land by types of recreation experiences. ROS is described on p. 42 of the 2016 SFRMP. “Other Zones” refers to Semi-Developed and Developed zones.



**Figure 18-2.** Graphical depiction of ROS zones and their characteristics.

### Americans with Disabilities Act Information

The Bureau permits persons with mobility disabilities to use powered mobility devices for purposes of accessing state forest lands. In some instances, these areas are not otherwise open for motorized access by the general public. Permits can be obtained through District Offices by filling out a Mobility Device Permit Form. Once the form is completed the district can provide the Orange Placard for the vehicle that is to be utilized, or the blue Mobility Device Permit Sticker for the mobility device that is to be utilized. Each individual should make contact with the district where they wish to utilize their permit. It should be understood that the mobility device permit allows for only the individual to utilize the mobility device, however, someone may be with the permittee to assist in opening gates and collection of game. No other person should be hunting from the mobility device, unless it is a juvenile hunters(s), (up to three) that the permittee is mentoring. A list of areas where permits may be utilized and are not permitted can be found on the back of the Mobility Device Permit. Violations of the permit may result in the permit being terminated.

## 19) Communication, Education, and Interpretation

The bureau disseminates and receives information to and from various destinations via various channels. Recipients of bureau content include researchers, government agencies, the public, and various stakeholders. The bureau contributes articles for publications; it reports to government agencies and shares data with interested parties; and it develops educational content for broad use by the public. The bureau is also a source of unbiased, credible information on Pennsylvania forests and native wild plants, and it shares its data regularly.

**Communication** - Effective communication is vital to conservation agencies, where efforts are tied to resource stewardship on the parts of individuals and communities. The bureau employs effective communication and public outreach to foster stewardship and convey a message of environmental sustainability. Central to the bureau's communication strategy is to inform visitors and stakeholders about the timing and siting of management activities, the availability of various recreation opportunities, and the importance of forest resources. Bureau staff remain available to engage in thoughtful dialogue with stakeholders, to answer questions, field concerns, and provide information.

**Education** - Public education and outreach is an essential component of the bureau's mission. DCNR's enabling legislation mandates it to "promote forestry and the knowledge of forestry" throughout the commonwealth. The bureau's mission further states that it will accomplish this by "advising and assisting other government agencies, communities, landowners, forest industry, and the public in the wise stewardship and utilization of forest resources." This is especially important with youth. The bureau serves as the state sponsor for Project Learning Tree, an international forest education program. Most forest districts participate in numerous educational opportunities with stakeholders from Envirothon, to fire prevention and Smokey programs, to forest resource programming with schools.

**Interpretation** – Interpretation is as a mission-based communication process that forges emotional and intellectual connections between the interests of the audience and the meanings inherent in the resource. The bureau of forestry provides interpretive wayside panels located at various locations including trailhead parking areas, along trails, at district offices, and other areas of the high use by the public.

The Clear Creek State Forest takes an active role in communication through the following:

### Communication:

#### Media

- Web based
  - E-mail List
  - Website
- Social
  - Facebook Page

#### Printed

- Articles in Newspapers
- Yearly Newsletters

- Brochures
- Driving Tour Handout

### **Public Contact/Engagement**

- Fairs/Expos/Shows
- Career Fairs
- Displays/Exhibits
- Incidental (while staff are performing other duties)
- District office walk in

### **Educational Presentations and Programs**

- Youth
  - Envirothon
  - FFA/4H
  - Scouts
  - Schools
  - Fire Prevention/Smokey Bear
- Adult
  - Woodland Owner Associations
  - Forest Landowners
  - Civic Organizations
  - Natural Resource NGO's
  - Public Tours
  - Urban Forestry/Tree City/Arbor Day

### **Interpretation**

- Interpretive Wayside Panels/Kiosks/Trails
- Demonstration Areas
- RMC/District offices



## Landscape Management Unit Plans

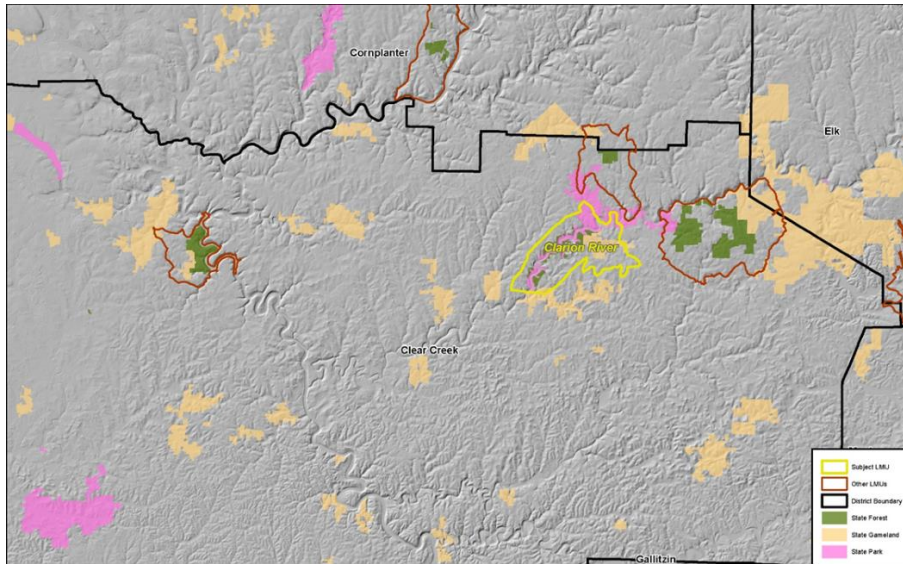
With the 2016 revision of the SFRMP, the bureau introduced the LMU concept to facilitate consistent, structured, and integrated resource management and planning across large landscape units on state forest and adjoining lands. LMUs were delineated for all state forest land in 2016-2017. The LMU, which complements other ecological delineations, now serves as the primary unit for landscape-level planning and management on state forest lands. LMUs help the bureau facilitate planning on a landscape scale that has ecological context, incorporate multiple forest uses and values, and promote ecological analysis. The units also serve as a tool to facilitate cooperative management with adjoining forest districts, landowners, and agencies.

The bureau has developed LMU Plans for every LMU containing state forest land. The LMU Plans for LMUs within Clear Creek District are found below. Each LMU Plan contains three elements:

- Overview – a 1-2-page narrative describing the LMU and its important features;
- LMU Priority Goals – a list of points of emphasis for state forest land management within the LMU, similar to the District Priority Goals, but at the LMU level; and
- Profile – tables, charts, and accompanying text that more fully describe the LMU's characteristics.

# Clarion River

## Landscape Management Unit



Clarion River LMU



## Overview

The Clarion River Land Management Unit (LMU) straddles the boundaries of Clarion, Forest, and Jefferson Counties. The DCNR lands in this LMU were acquired in 2010 by purchasing land from the Lyme Timber Company, and a land swap with the Pennsylvania Game Commission. The LMU contains a total of 26,159 acres. The DCNR land is divided between the Clear Creek State Forest (1,922 acres) and Cook Forest State Park (2,572 acres). The Bureau of Forestry owns the land above the 1400-foot elevation contour, and State Parks owns the land below that elevation. To avoid confusion for the public, State Parks Rules and Regulations apply to the entire property, and their rangers patrol all of it.

The LMU also includes parts of Cook Forest State Park, and parts of State Game Lands 74 and 283, with most of the land being privately owned. The LMU is almost completely forested, with the bulk of the timber being either dry oak or hemlock types. Some of the private properties in the LMU were farmed in the past and are still cleared. However, there is very little agriculture in the area now. Some private lands were strip mined decades ago, and old shallow gas wells are plentiful in the area. There is no Marcellus gas activity in this area at this time.

The entire DCNR property was high-graded in the past, but a significant amount of oak remains in the small and medium size classes. Because of the past cutting practices, a few sections on very steep north-facing slopes are now almost pure stands of eastern hemlock and black birch.

The hemlock woolly adelgid was found in Cook Forest in 2013 and is slowly expanding its range here. Cook Forest has 2,300 acres of old growth hemlock, and the overall LMU has many thousands of acres of second growth hemlock. Numerous stream corridors and sections of the Clarion River are dominated by large stands of second growth hemlock. The Bureaus of Forestry and State Parks have been treating hemlocks in Cook Forest old growth areas since 2013. The emerald ash borer has gone thru the area, ravaging all the ash trees. As of this writing in 2017 the ash trees are dead, or nearly so. Forest District 8 is treating a small number of ash trees in the LMU in Cook Forest and at a Fish and Boat Commission parking lot on the Clarion River.

The DCNR lands border both sides of the Clarion River almost continuously for about 12 miles, with only two significant sections of private land interrupting it. About half of the property is in the viewshed of the Clarion River, which is designated a "Wild and Scenic River". Access is very limited. This limits opportunities for both recreation and timber management. We do not plan on doing timber management on the State Parks land but could do some on the State Forest sections.

The primary use for this land is recreation. The North Country Trail and the Baker Trail both pass thru sections of the tract. State Parks has a Commercial Activities Agreement with a nearby equestrian campground. They utilize trails in the Highland and Maxwell sections of the tract, including two river crossings. The trails cross both State Forest and State Park lands, but they all follow Parks regulations and are patrolled by Parks rangers. Hunting is good, but public access is very restricted by lack of rights of ways across private lands.

There are many small streams that drain the DCNR property and other LMU lands, emptying into the Clarion River. Some are degraded by acid mine drainage, and some are seasonal. Blyson Run, near the southern end of the LMU, is a Wilderness Trout Stream, and supports natural reproduction of trout

## Priority Goals

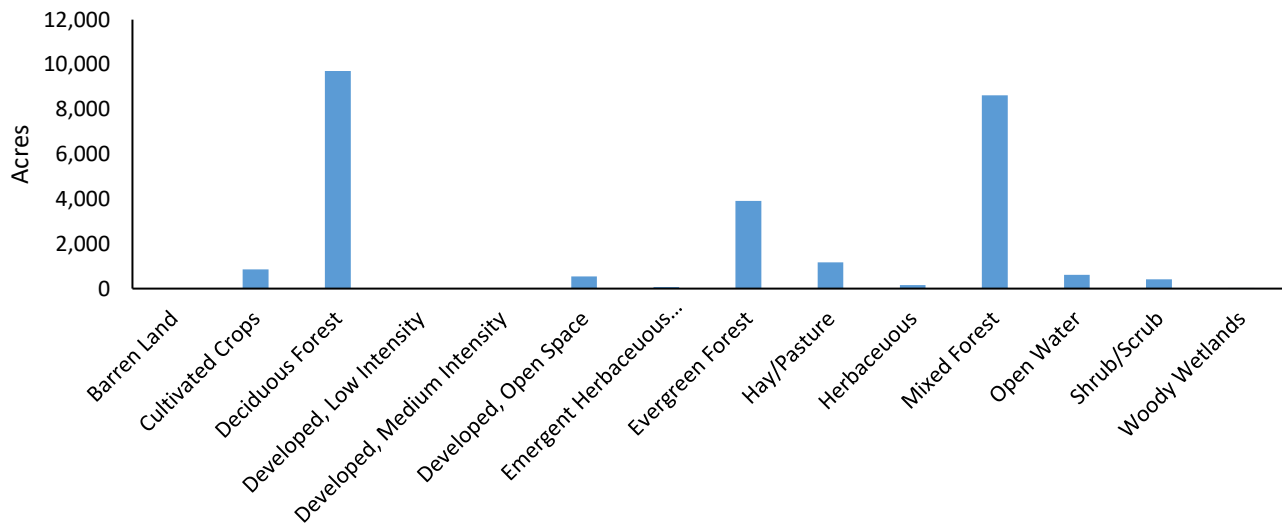
- Coordinate with State Park personnel to improve public awareness of and access to recreational opportunities.
- To pursue opportunities for land acquisition with adjacent landowners to further protect the Wild and Scenic River corridor
- Utilize early detection and rapid response on Hemlock Woolly Adelgid
- To preserve the Clarion River watershed by rehabilitating degraded tributaries and protecting High Quality and Exceptional Value streams like Blyson Run
- Prioritize the maintenance and promotion of core forest conditions and values
- Create more wildlife openings for recreational users

## Profile

**Table 1.** LMU acreage: total and state forest land only.

|                   | Acres  |
|-------------------|--------|
| State Forest Land | 1922   |
| LMU Total         | 26,159 |

**Ecoregion:** Pittsburgh Low Plateau



**Figure 1.** LMU acreage by land cover categories from the National Land Cover Dataset for the entire LMU.

This is a landscape that is dominated by forest land. It contains a continuum of deciduous, evergreen, and mixed forest landscapes. Management strategies are to maintain a healthy and sustainable forest while increasing the less common native habitats.

**Table 2.** Miles of roads by category on state forest land in this LMU. Road categories are described on p. 199 of the 2016 SFRMP.

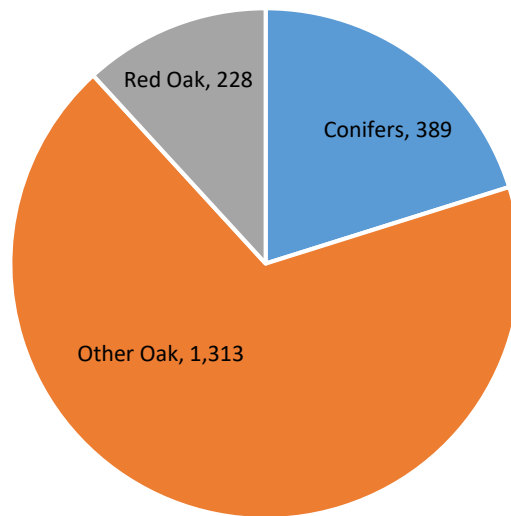
| Road Category            | Total Miles |
|--------------------------|-------------|
| Z1 - Public Use Road     | 1           |
| Z3 - Administrative Road | 0           |
| <b>Total</b>             | <b>1</b>    |

Developed parking areas are located on the edge of the state forest land and accessed by township roads. Highland Drive is the only state forest public use road that is interior.

**Table 3.** Miles of trails on state forest land in this LMU open to various types of recreational use. Note that miles are not additive, and a single trail may be open to multiple use types. Shared-use trails, which make up the majority of trails on state forest land, are open to hiking, biking, horseback riding, and cross-country skiing.

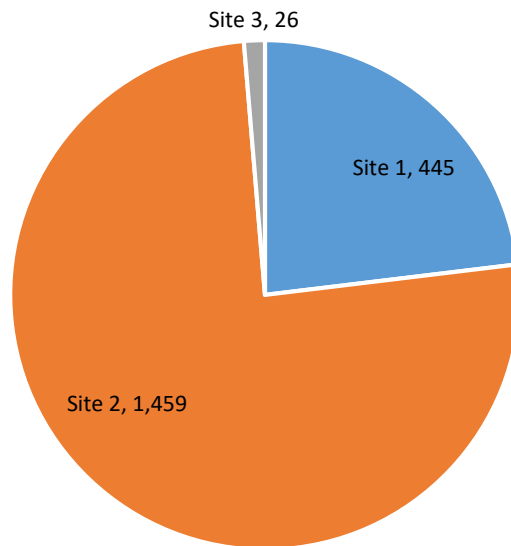
| Trail Category                   | Total Miles |
|----------------------------------|-------------|
| Hiking                           | 8           |
| Biking                           | 6           |
| Equestrian                       | 6           |
| X-Skiing                         | 6           |
| ATV I                            | 0           |
| ATV II                           | 0           |
| Snowmobile/<br>Joint Use<br>Road | 0           |

Multiple use trails provide for hiking, biking, horseback riding, and cross-country skiing. Numerous loop trails provide for a variety of experiences including the Blyson, Highland, and Finkbinder Loops. The North Country Trail, a national scenic trail, is designated for hiking only.



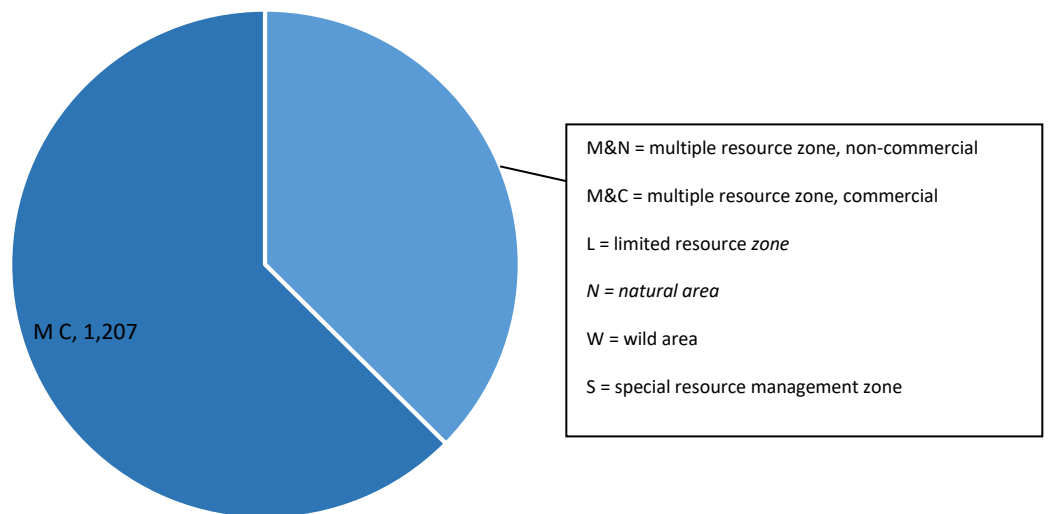
**Figure 2.** Acreage of state forest land in this LMU by aggregated forest type. The forest types are described on p. 108 of the 2016 SFRMP.

Oaks dominate the forested landscape due to past disturbance regime of widespread logging, wildfires, and extremely low deer population.



**Figure 3.** Acreage of state forest land in this LMU by site class. Site classes denote the potential quality of the growing site. Other site classes are described on p. 53 of 2016 SFRMP.

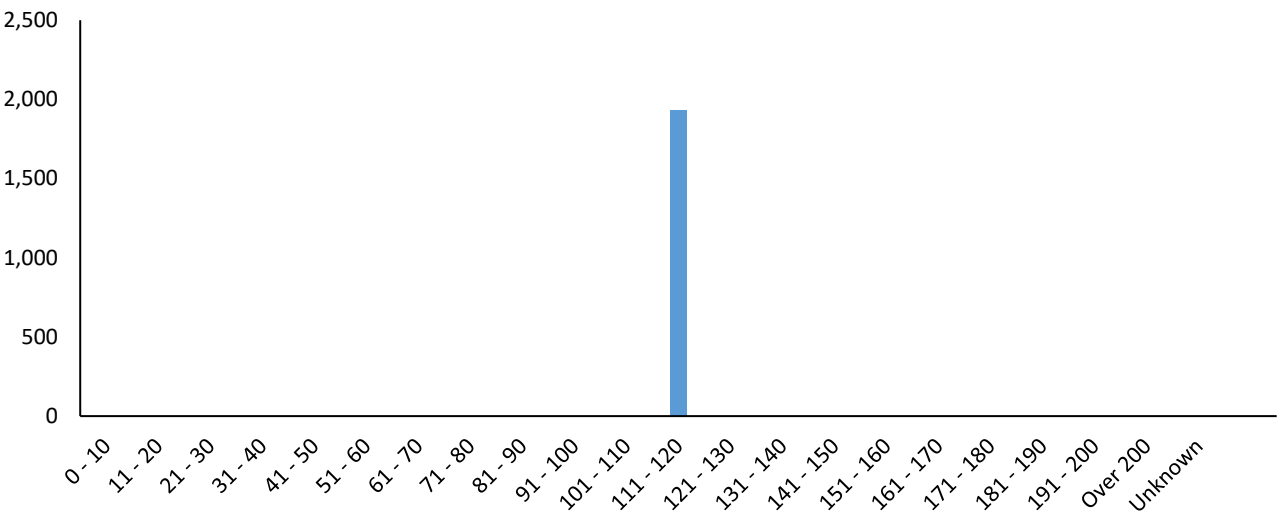
Medium to high quality sites found on most of these forests are capable of growing a merchantable forest product.





**Figure 4.** Acreage of state forest land in this LMU by management zone. Management zone is dictated by primary land use and land capability. Further descriptions of commerciality and zoning are found on p. 54 of the 2016 SFRMP.

Restricted access or steep slopes contribute to most of the limited resource acres. This tract borders the Clarion River and the slope percent is high due to this.



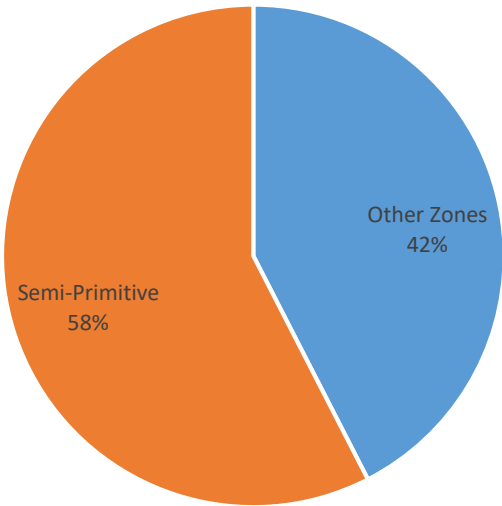
**Figure 5.** Acres of state forest land in this LMU by forest age classes.

With no recent timber harvesting the forest is even aged. Management will focus on balancing the age class distribution by created young forests through harvesting mature forest.

**Table 4.** Miles of stream by classification within entire LMU. Department of Environmental Protection stream classifications are described in Chapter 93 Water Quality Standards of Title 25 in the Pennsylvania Code.

| Class                        | Total (miles) |
|------------------------------|---------------|
| Undesignated                 | 18            |
| High Quality Waters          | 30            |
| Perennial Cold Water Streams | 7             |
| Exceptional Value Waters     | 8             |
| Scenic Rivers                | 17            |
| Total                        | 81            |

Water resources predominate in this landscape. Numerous named and unnamed waters abound. Maxwell Run and Cathers Run are High-Quality Cold-Water Fisheries. Blyson Run has a higher designation as an Exceptional Value Stream. The Clarion River splits this LMU in half. Balancing recreational opportunities and protecting water resources is very important.

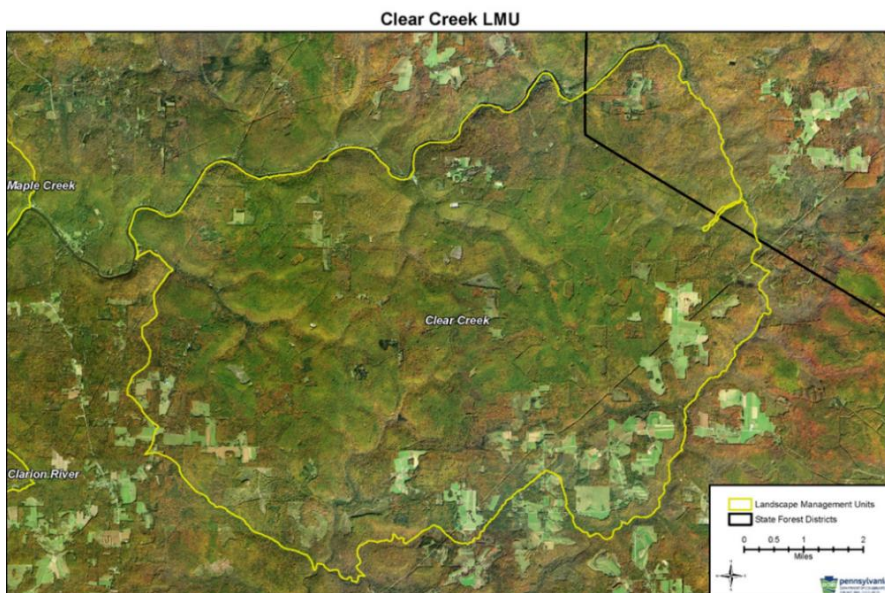
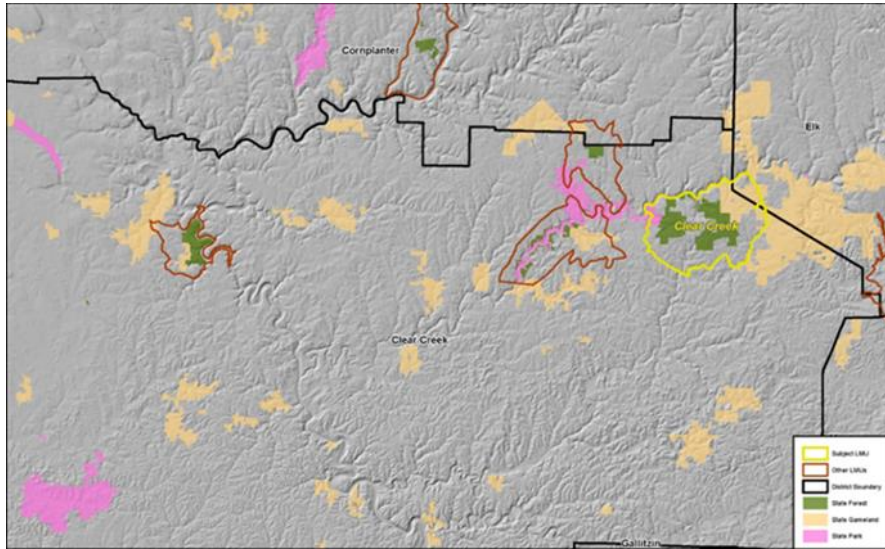


**Figure 6.** Acres in 2012 of state forest land in this LMU by Recreation Opportunity Spectrum (ROS) classifications. ROS is an inventory system developed by the U.S. Forest Service, to characterize land by types of recreation experiences. ROS is described on p. 42 of the 2016 SFRMP. “Other Zones” refers to Semi-Developed and Developed zones.

Although access is limited there is an established road network making almost half semi-developed

# Clear Creek

## Landscape Management Unit



## Overview

The Clear Creek LMU is located in northern Jefferson County. The Clear Creek LMU combines both the Callen Run and the Clear Creek drainages which formed the Clear Creek State Forest when it was founded in 1920. The LMU contains a total of 40,417 acres with 9,876 acres of state forest land. The state forest land originally included an additional 1,444 acres that is now Clear Creek State Park which was formed in 1963. The name is derived from the crystal-clear stream that flows through the tract and Callen Run is equally impressive. Both streams are listed as high quality and stocked with trout and Callen Run contains a small fish hatchery.

The state forest portion of the LMU is dominated by a mixed-oak forest and has only a small percentage of non-forest openings. The exception is the Laurel Fields which is a unique area that attracts visitors during the Brookville Laurel Festival and the Fat Tire Challenge mountain bike race. The current forest's origin can be traced back to 1903 when a fire spread through the area after the virgin forest had been harvested. The current forest shaped by its past, is predominately oak with hemlocks common in mesic areas. Today's forest management focuses on creating young forests to diversify the age, structure, and species composition of the forest. The increased diversity will improve forest health and resiliency to insect and disease threats. Oil and gas developments have also influenced the landscape with numerous shallow wells and one new deep gas well.

Clear Creek State Park serves as a recreational hub that expands into the LMU. Bear Town Rocks is a scenic vista and boulder field that is an extremely popular attraction. It is located within an 8-mile trail network. There is also an auto tour highlighting the history and ecology of the tract.

## Priority Goals

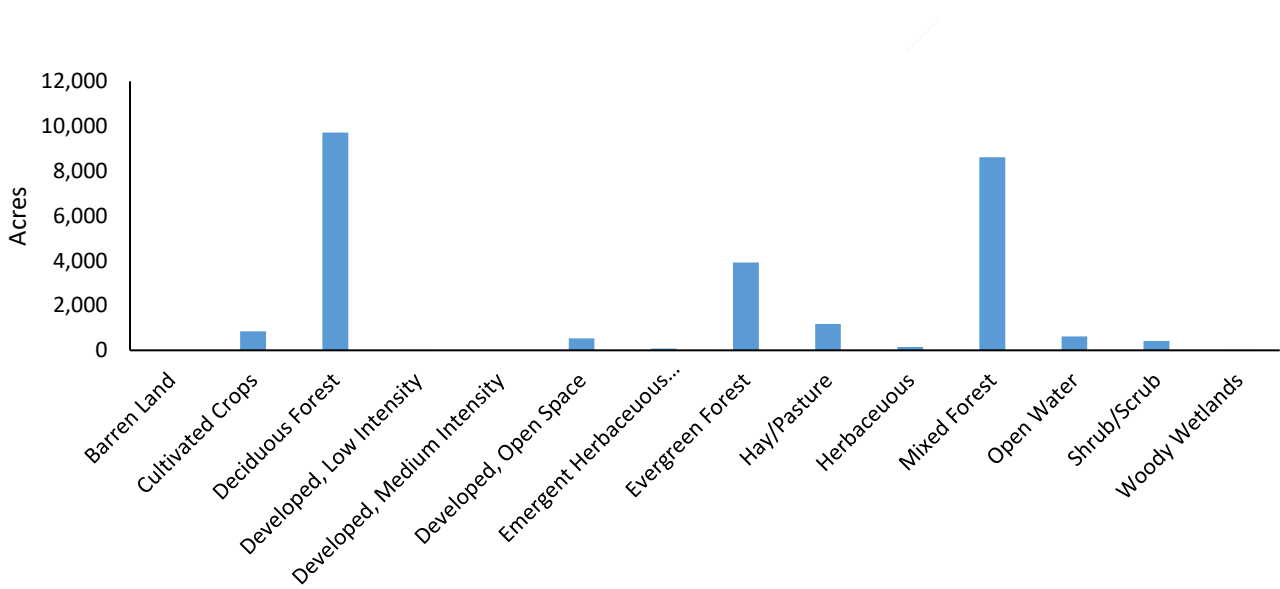
- a) To diversify the age classes and species composition through timber harvesting with an emphasis on perpetuating the oak species in continuum of young forest through old growth forest and continuing research on the high-quality oak stands
- b) To provide and maintain healthful, low-density recreational opportunities and experiences across the landscape; while protecting the resource and the user. Explore opportunities to expand recreation in the Pine Run and Callen Run areas while mitigating the high-use in the Beartown Rocks area
- c) To pursue opportunities for improving wildlife habitat through geologic and timber management, fruit and chestnut orchards, and herbaceous openings.
- d) To foster relationships with subsurface owners in the management of geologic resources to minimize surface disturbances, forest fragmentation, and the introduction or spread of invasive species while optimizing potential benefits through cooperation.
- e) To evaluate forest health for all threats, including native and non-native plants, insects, diseases, and declines. An exotic and invasive species of concern is glossy buckthorn.
- f) Develop the Callen Run Dam to provide handicap fishing access.
- g) To manage and administer oil and gas activity in a manner that is consistent with the Bureau's mission statement and the principles of ecosystem management by avoiding, minimizing, or mitigating adverse impacts to state forest land, ensuring compliance with executed agreements, and maintaining positive working relationships with severed rights owners.

Profile

**Table 1.** LMU acreage: total and state forest land only.

|                   | Acres  |
|-------------------|--------|
| State Forest Land | 9,880  |
| LMU Total         | 40,417 |

Ecoregion: Pittsburgh Low Plateau



**Figure 1.** LMU acreage by land cover categories from the National Land Cover Dataset for the entire LMU.

**Table 2.** Miles of roads by category on state forest land in this LMU. Road categories are described on p. 199 of the 2016 SFRMP.

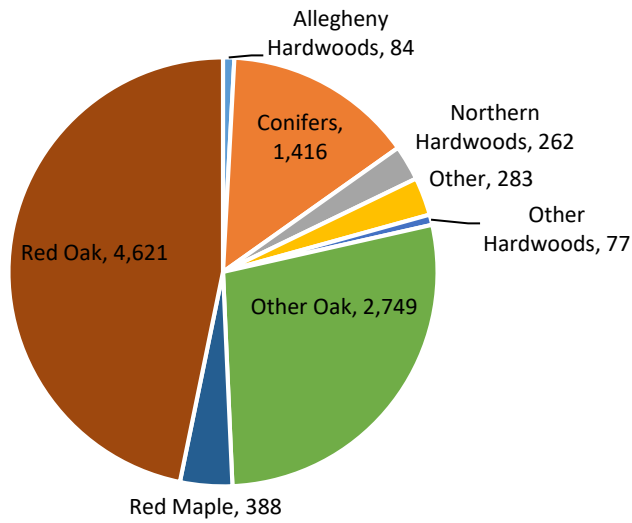
| Road Category            | Total Miles |
|--------------------------|-------------|
| Z1 - Public Use Road     | 19          |
| Z3 - Administrative Road | 41          |
| Total                    | 60          |

Select administrative roads are opened seasonally for hunter access.

**Table 3.** Miles of trails on state forest land in this LMU open to various types of recreational use. Note that miles are not additive, and a single trail may be open to multiple use types. Shared-use trails, which make up the majority of trails on state forest land, are open to hiking, biking, horseback riding, and cross-country skiing.

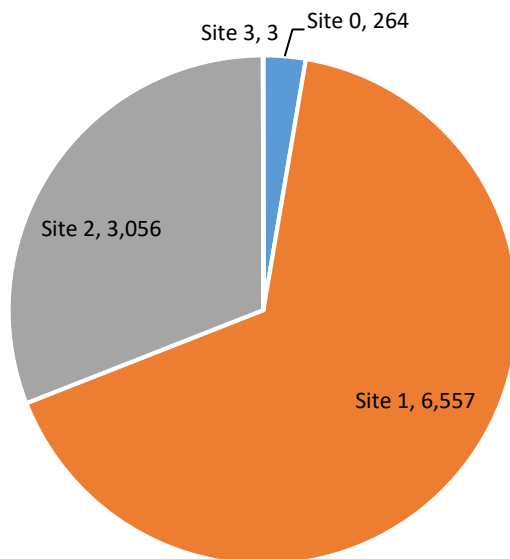
| Trail Category                   | Total Miles |
|----------------------------------|-------------|
| Hiking                           | 11          |
| Biking                           | 11          |
| Equestrian                       | 0           |
| X-Skiing                         | 8           |
| ATV I                            | 0           |
| ATV II                           | 0           |
| Snowmobile/<br>Joint Use<br>Road | 0           |

**Clear Creek State Park is adjacent and serves as a recreational hub primarily for hiking.**



**Figure 2.** Acreage of state forest land in this LMU by aggregated forest type. The forest types are described on p. 108 of the 2016 SFRMP.

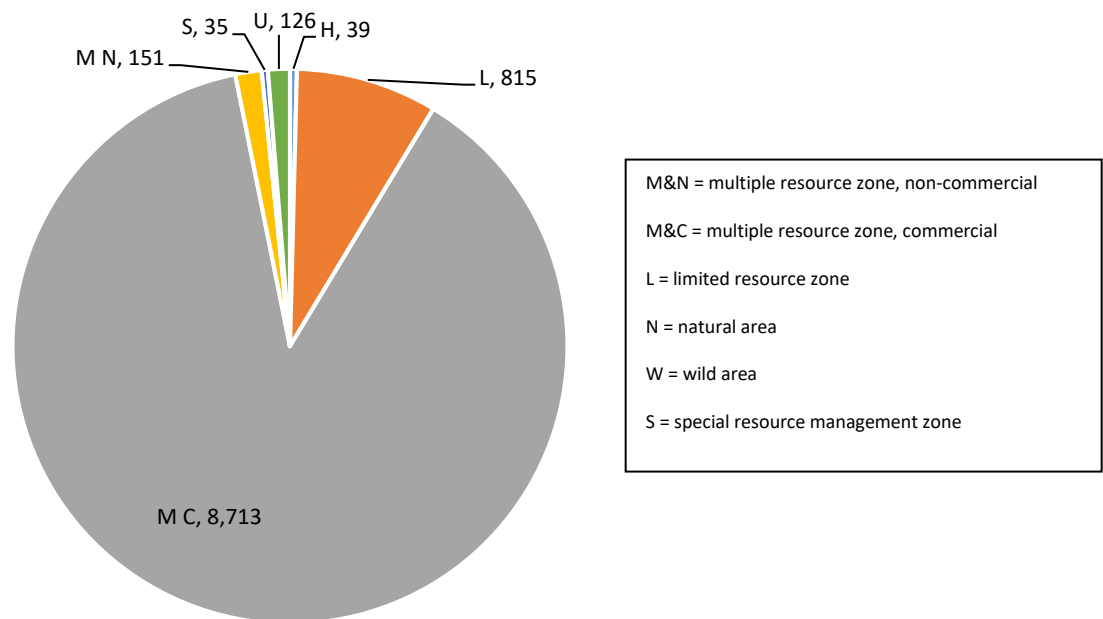
Oaks dominate the forested landscape due to historic disturbance regime of widespread logging, wildfires, and extremely low deer populations at the turn of the century.





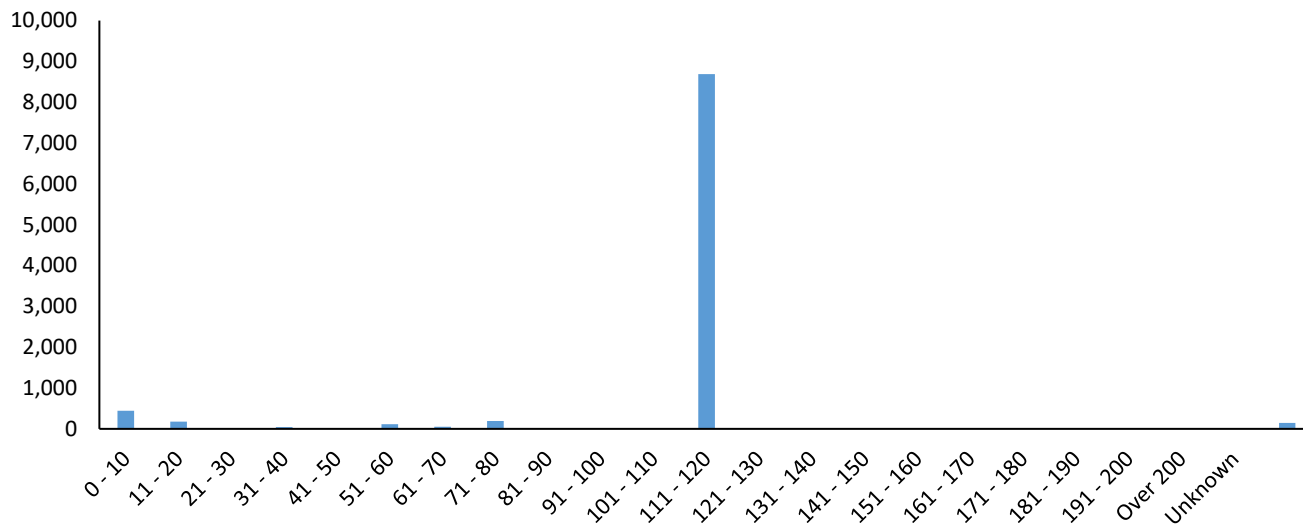
**Figure 3.** Acreage of state forest land in this LMU by site class. Site classes denote the potential quality of the growing site. "Site 0" indicates non-forested lands or forested lands where the vegetation has not yet been typed. Other site classes are described on p. 53 of 2016 SFRMP.

High quality site 1 oak forest are valuable for timber and wildlife. Site 1 stands are the best and most optimal growing sites for trees. This LMU has a large amount of site 1 stands.



**Figure 4.** Acreage of state forest land in this LMU by management zone. Management zone is dictated by primary land use and land capability. Further descriptions of commerciality and zoning are found on p. 54 of the 2016 SFRMP.

Most of the land base is accessible and commercial.



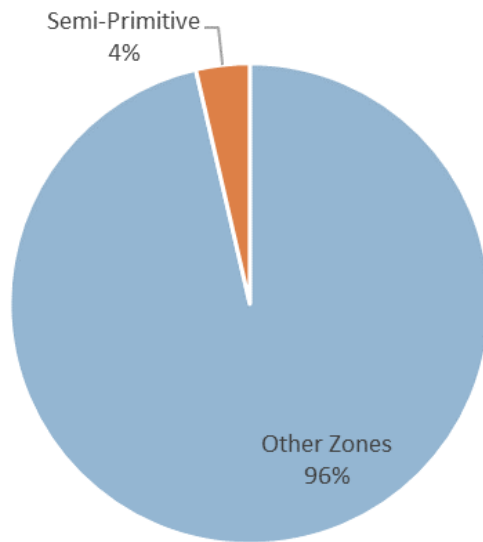
**Figure 5.** Acres of state forest land in this LMU by forest age classes.

Balancing the age class distribution through timber harvesting is a priority goal.

**Table 4.** Miles of stream by classification within entire LMU. Department of Environmental Protection stream classifications are described in Chapter 93 Water Quality Standards of Title 25 in the Pennsylvania Code.

| Class                    | Total (miles) |
|--------------------------|---------------|
| Undesignated             | 7             |
| High Quality Waters      | 109           |
| Exceptional Value Waters | 0             |
| Scenic Rivers            | 3             |
| <b>Total</b>             | <b>118</b>    |

This LMU derives its name from the High-Quality Clear Creek watershed that flows Scenic Clarion River. Tributaries are also known to hold populations of native Brook Trout.

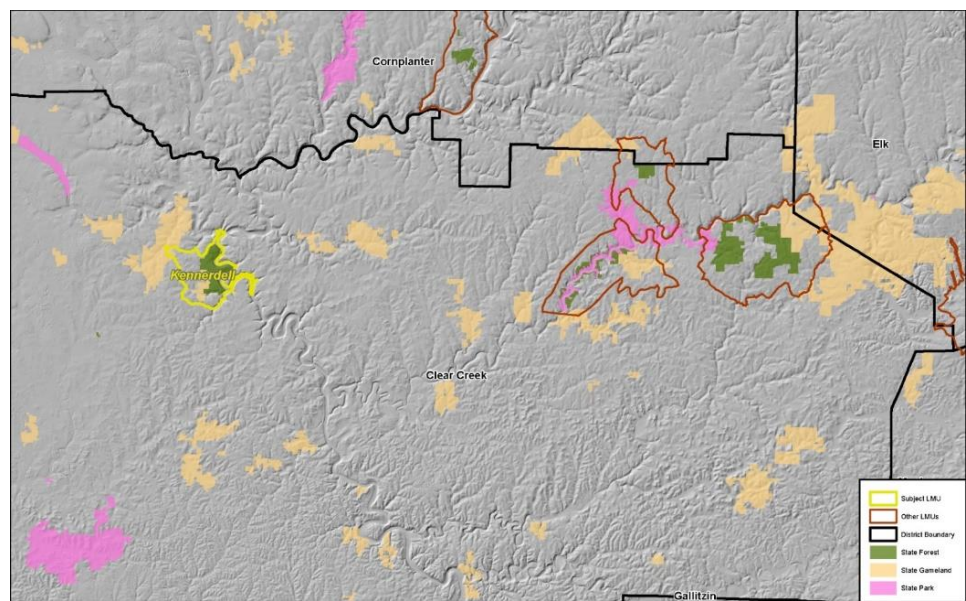


**Figure 6.** Acres in 2012 of state forest land in this LMU by Recreation Opportunity Spectrum (ROS) classifications. ROS is an inventory system developed by the U.S. Forest Service, to characterize land by types of recreation experiences. ROS is described on p. 42 of the 2016 SFRMP. “Other Zones” refers to Semi-Developed and Developed zones.

Due to extensive shallow gas well, infrastructure most of the area falls into other zones as semi-developed.

# Kennerdell

## Landscape Management Unit



Kennerdell LMU



## Overview

The Kennerdell LMU is in southern Venango County. It is in Mineral and Victory Townships and borders the Allegheny River. The Bureau of Forestry acquired the majority of this tract in 1981 from the Bureau of State Parks. This LMU contains a total of 11,498 acres with 3,243 acres of state forest land.

The majority of state forest land within this LMU is forested. It includes two small sections of State Game Lands 39, with the remaining acreage in private land. The different types of forest include oak stands, river flood plain species, hemlock stands, and northern hardwood stands with an oak component. We have done some timber management as part of the Bureau of Forestry's effort to balance the age classes of State Forest. About 350 acres of mature forest has been converted to early successional habitat in the last 20 years, including a 100-acre Overstory Removal in 2016. This contributes to the diversity of the habitat in the area and is especially important since most of the LMU is forested and does not include young forest.

The LMU contains a few old fields, but there is very little agriculture in the area. There is also an abandoned 20-acre strip mine on the State Forest tract. Part of this has converted to a small but beautiful wetland with our help. It is now home to many species of wetland plants and animals. Dennison Run is designated as a High-Quality Stream that has native brook trout and runs through the middle of the tract. Bullion Run is a major drainage that runs through the southern end of the tract.

This area has a long history of land use with many abandoned oil wells throughout, and gas wells that are still active today. There is an abandoned oil pumping station that is taken care of to preserve the history of the area on the northern end of the tract. Iron ore was a major resource in the area from 1840 to 1860, which can be seen by a standing iron furnace on Bullion Run. There are two main pipelines that run through the tract as well as small lines that support the town of Kennerdell.

This LMU has an invasive species issue because of all the different types of land use. The private lands surrounding the State Forest have many ornamental landscape plants that have spread from homes to the State Forest and Game Lands. These include Japanese barberry, honeysuckle, Japanese knotweed, and other shrubs and herbaceous plants. These are especially troublesome in the designated Wild Plant Sanctuary area along the Allegheny River. Knotweed fragments float down the river from upstream sources, making it impossible to try to eradicate. In addition, the emerald ash borer has killed the ash in the area, and the hemlock woolly adelgid is nearby.

An unusual feature is a small stand of pawpaw. It is right along the river and is perhaps an acre in size. We don't know of any other pawpaw in the area, and the origin of this one is uncertain. It probably was planted many years ago by oil field workers when they lived there.

The tract has 26 miles of trails that are maintained by the district as well as a local Equestrian group. Recreation is a major land use for the State Forest due to the proximity of the Allegheny River. In fact, this is the heaviest used tract of State Forest for recreation in Forest District 8.

## Priority Goals

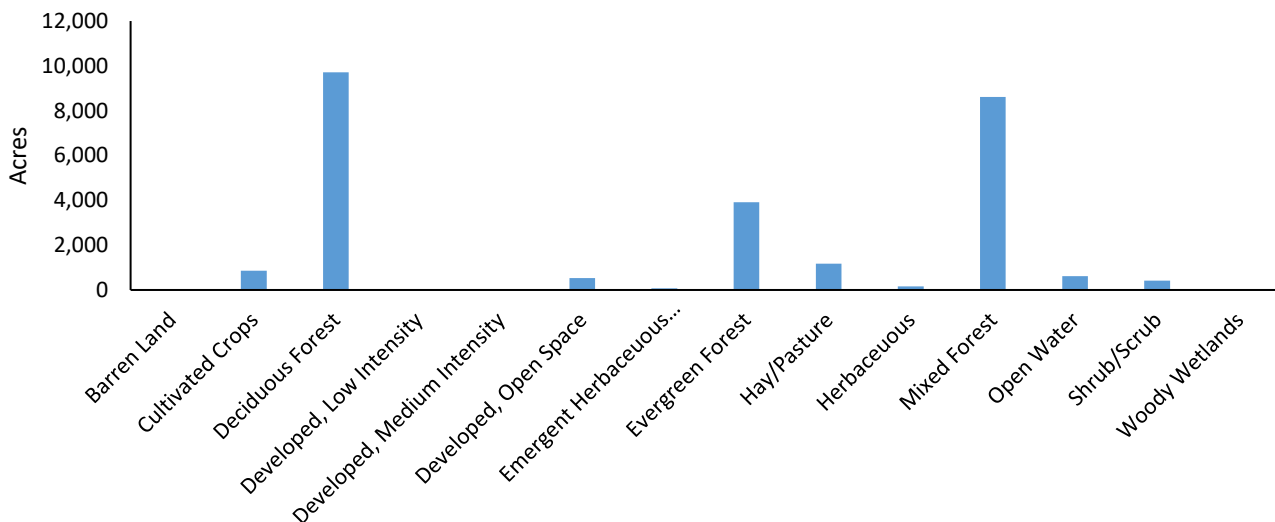
- To communicate with recreational user groups to foster relationships that better serve them and utilize their resources.
- To conserve and enhance the rich diversity of plant species in the Wild Plant Sanctuary and other unique area across the landscape. This will be accomplished through a management plan for these species.
- Increase the recreational experience on this tract by installing a new pit toilet and making improvements and assessment of the current trail system
- To pursue opportunities for improving wildlife habit through timber management, fruit and chestnut orchards, and herbaceous openings.
- To evaluate forest health for all threats, including native and non-native plants, insects, diseases, and declines. Prioritize and respond to those threats in efficient and effective manner. Two threatening exotic and invasive species on this tract are Japanese barberry and Japanese knotweed.
- Develop waysides and interpretive panels for recreational users
- To manage and administer oil and gas activity in a manner that is consistent with the Bureau's mission statement and the principles of ecosystem management by avoiding, minimizing, or mitigating adverse impacts to state forest land, ensuring compliance with executed agreements, and maintaining positive working relationships with severed rights owners.

## Profile

**Table 1.** LMU acreage: total and state forest land only.

|                   | Acres  |
|-------------------|--------|
| State Forest Land | 3,243  |
| LMU Total         | 11,498 |

**Ecoregion:** Pittsburgh Low Plateau



**Figure 1.** LMU acreage by land cover categories from the National Land Cover Dataset for the entire LMU.

Deciduous forests dominate making increasing diversity a priority. However, areas near the Allegheny River contain the richest plant species diversity in the district.





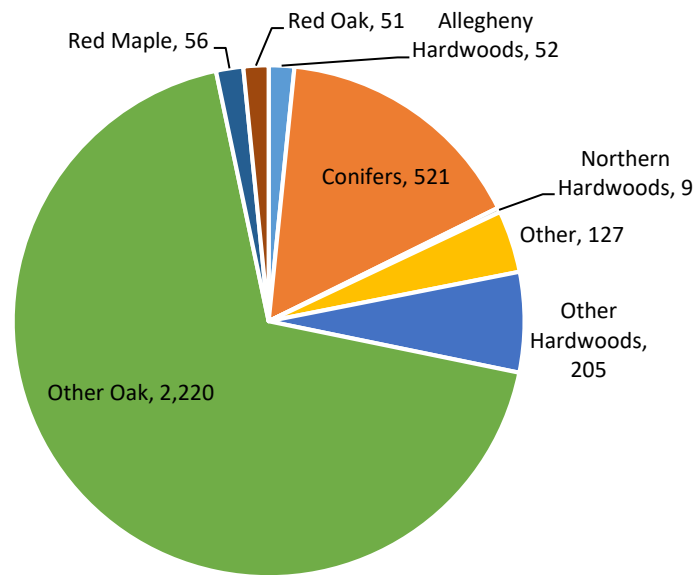
**Table 2.** Miles of roads by category on state forest land in this LMU. Road categories are described on p. 199 of the 2016 SFRMP.

| Road Category            | Total Miles |
|--------------------------|-------------|
| Z1 - Public Use Road     | 0           |
| Z2 - Drivable Trail      | 1           |
| Z3 - Administrative Road | 7           |
| <b>Total</b>             | <b>7</b>    |

**Table 3.** Miles of trails on state forest land in this LMU open to various types of recreational use. Note that miles are not additive, and a single trail may be open to multiple use types. Shared-use trails, which make up the majority of trails on state forest land, are open to hiking, biking, horseback riding, and cross-country skiing.

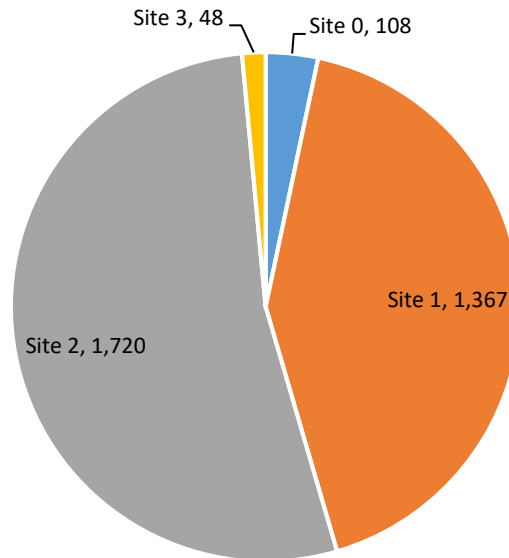
| Trail Category                   | Total Miles |
|----------------------------------|-------------|
| Hiking                           | 24          |
| Biking                           | 13          |
| Equestrian                       | 13          |
| X-Skiing                         | 23          |
| ATV I                            | 0           |
| ATV II                           | 0           |
| Snowmobile/<br>Joint Use<br>Road | 0           |

**Recreation is the primary focus in this LMU and attracts a variety of user groups.**



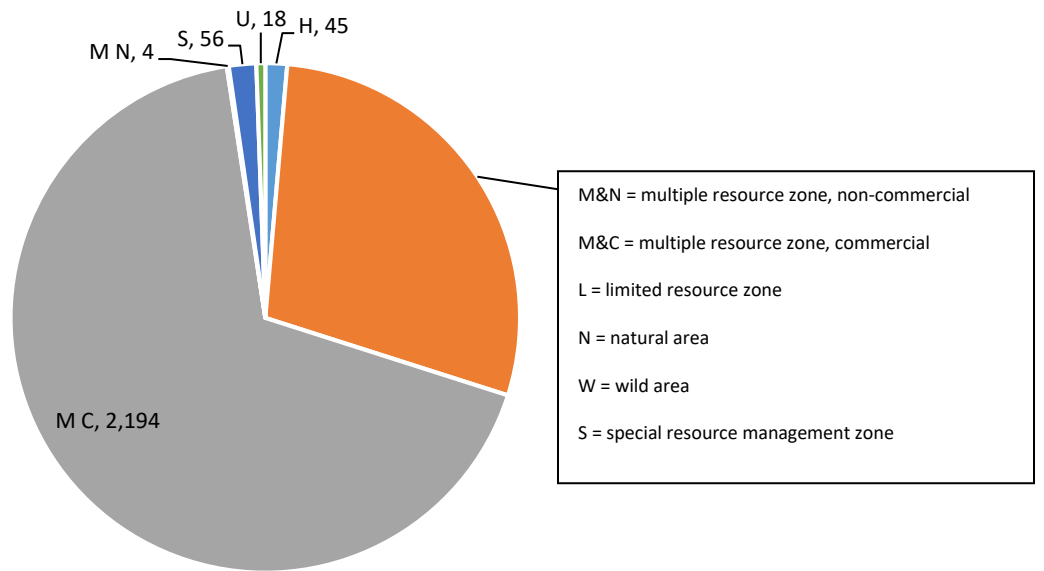
**Figure 2.** Acreage of state forest land in this LMU by aggregated forest type. The forest types are described on p. 108 of the 2016 SFRMP.

The oak forest type dominates the landscape and is the focus of management activities.



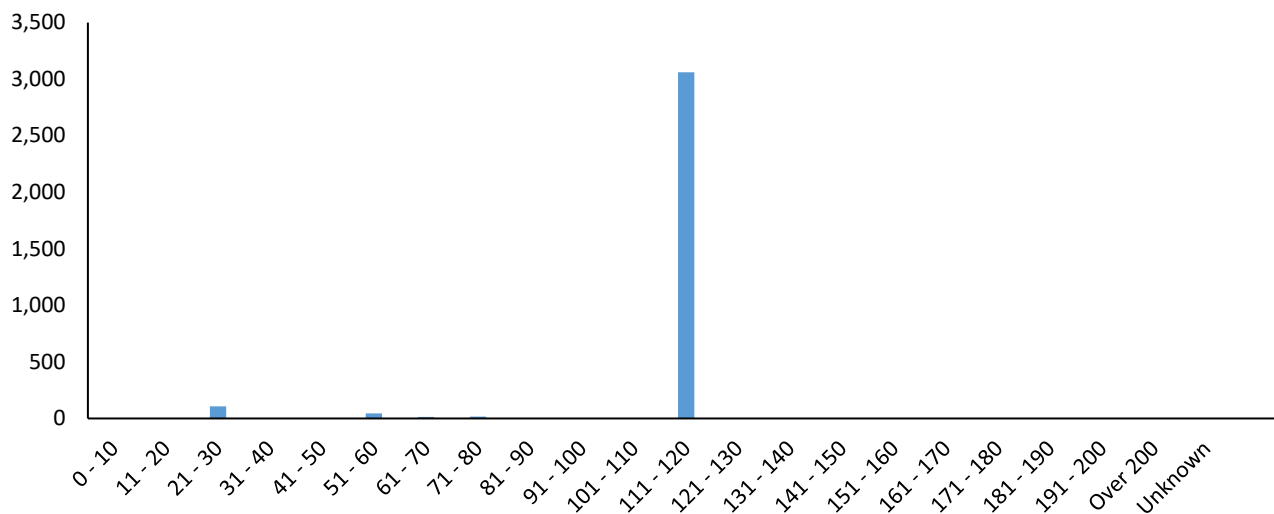
**Figure 3.** Acreage of state forest land in this LMU by site class. Site classes denote the potential quality of the growing site. "Site 0" indicates non-forested lands or forested lands where the vegetation has not yet been typed. Other site classes are described on p. 53 of 2016 SFRMP.

Medium to high quality sites found on most of this forest is are capable of growing a merchantable forest product.



**Figure 4.** Acreage of state forest land in this LMU by management zone. Management zone is dictated by primary land use and land capability. Further descriptions of commerciality and zoning are found on p. 54 of the 2016 SFRMP.

Commercial operations on approximately 1/3 of the area has been restricted to preserve other values.



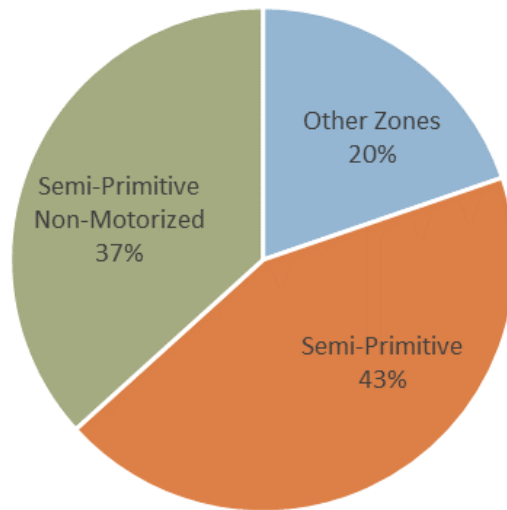
**Figure 5.** Acres of state forest land in this LMU by forest age classes.

Balancing the age class distribution is important for the health and diversity of the forest.

**Table 4.** Miles of stream by classification within entire LMU. Department of Environmental Protection stream classifications are described in Chapter 93 Water Quality Standards of Title 25 in the Pennsylvania Code

| Class                        | Total (miles) |
|------------------------------|---------------|
| Undesignated                 | 14            |
| High Quality Waters          | 1             |
| Perennial Cold Water Streams | 6             |
| Exceptional Value Waters     | 9             |
| Scenic Rivers                | 13            |
| <b>Total</b>                 | <b>43</b>     |

Water based recreation is highlighted by Dennison Run, an exceptional value stream, and the Allegheny River which forms the eastern state forest boundary.

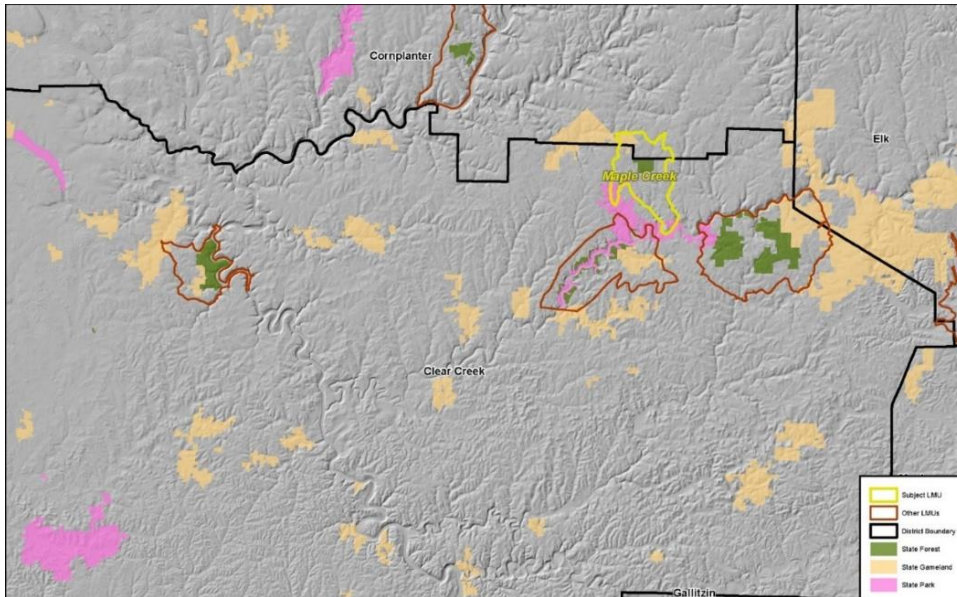


**Figure 6.** Acres in 2012 of state forest land in this LMU by Recreation Opportunity Spectrum (ROS) classifications. ROS is an inventory system developed by the U.S. Forest Service, to characterize land by types of recreation experiences. ROS is described on p. 42 of the 2016 SFRMP. “Other Zones” refers to Semi-Developed and Developed zones.

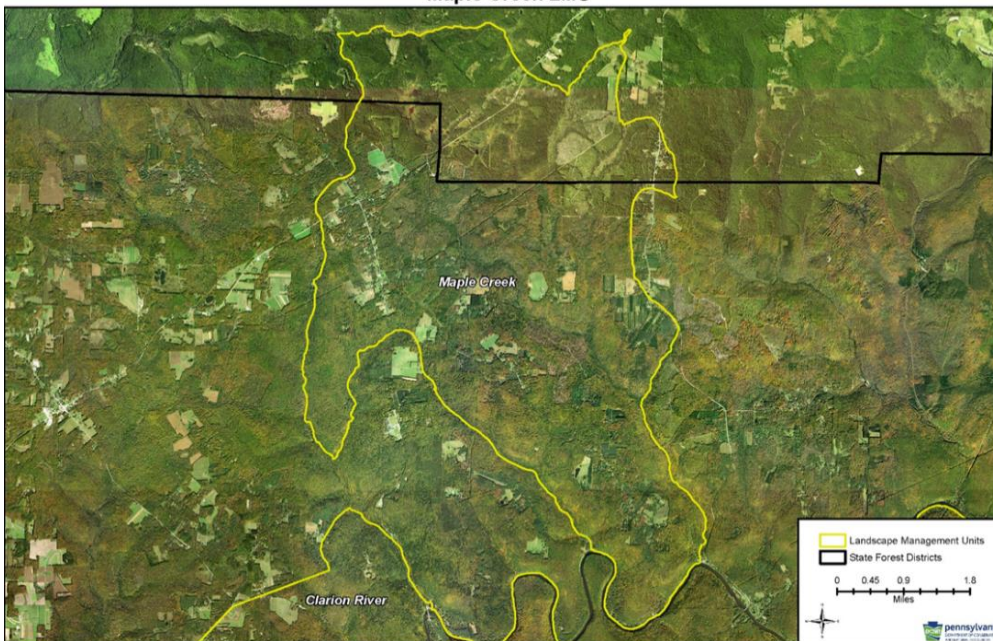
A variety of recreational opportunities and experiences can be had in this LMU.

# Maple Creek

## Landscape Management Unit



Maple Creek LMU





## Overview

The Maple Creek LMU is located in southern Forest County at the northeast corner of Clarion County. The LMU contains a total of 16,162 acres with 1,012 acres of state forest land that was acquired in the 1960's. Large private tracts of land border the area and Cook Forest State Park is in close proximity. The name is derived from the scenic stream that meanders through the LMU and the maple trees that abound.

This LMU is mostly forested but does contain several wetlands that are slowly succeeding into forest. The area was completely logged by the end of the 1800's and still had unforested areas when acquired. At that time, white pine, spruce, and larch were planted in the open areas while northern hardwoods. Presently, red maple, sugar maple, and black cherry, continued to mature. Native and stocked trout benefit from the hemlocks lining maple creek, while deer, grouse, and squirrels find cover in dense spruce plantings. Current management has further enhanced the LMU by creating young forest habitat through regenerating hardwoods and white pine plantations. The combination of these diverse habitats makes this LMU exceptional for wildlife habitat, providing water, food, and shelter needed to thrive.

Recreational opportunities are also numerous with hunting, fishing, and hiking being primary. The abundance of wildlife draws many hunters to the area especially for deer season. Maple Creek is a stocked trout stream with good access and heavy use. A segment of the North Country Trail (a national hiking trail) crosses over Maple Creek twice, with a shelter located along the trail for backpack camping.

## Priority Goals

- a) To diversify the age classes and species composition through timber harvesting with an emphasis on improving wildlife habitat and preserving palustrine communities
- b) To establish and maintain perpetual young forest areas through frequent harvesting to sustain their benefits to wildlife over a longer period
- c) Explore opportunities to develop a trail network to dovetail into the North Country Trail.
- d) To pursue opportunities for partnerships with adjacent landowners to improve public access and increase visitation.
- e) To evaluate forest health for all threats, including native and non-native plants, insects, diseases, and declines. Prioritize and respond to those threats in efficient and effective manner.
- f) Increase opportunities for handicap hunters through the maintenance of shooting lanes and wildlife openings.
- g) To manage and administer oil and gas activity in a manner that is consistent with the Bureau's mission statement and the principles of ecosystem management by avoiding, minimizing, or mitigating adverse impacts to state forest land, ensuring compliance with executed agreements, and maintaining positive working relationships with severed rights owners.

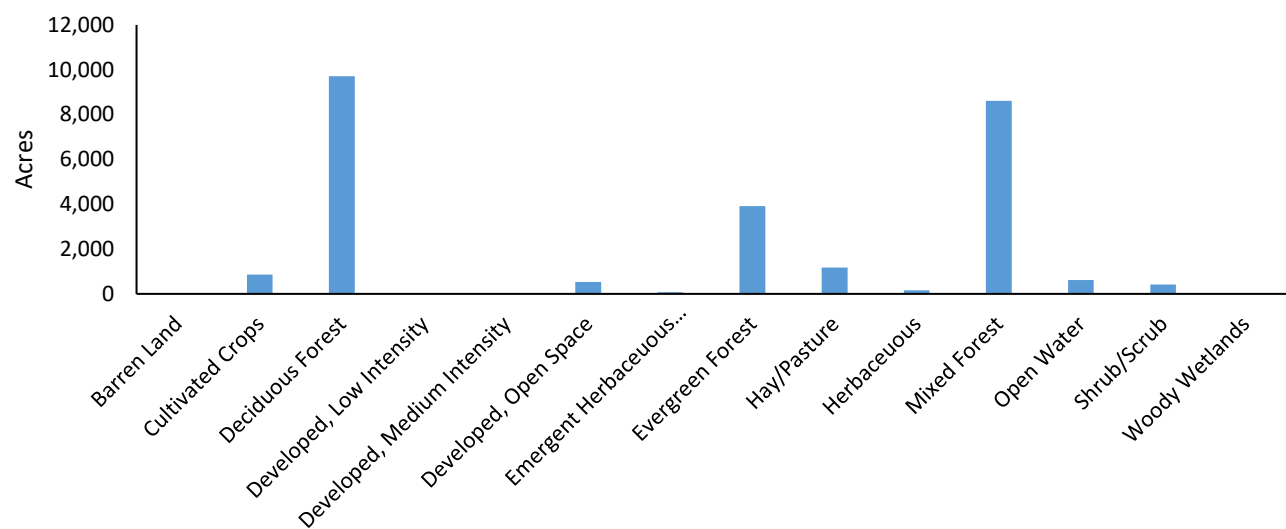
## Profile

**Table 1.** LMU acreage: total and state forest land only.

|                   | Acres  |
|-------------------|--------|
| State Forest Land | 1,012  |
| LMU Total         | 16,162 |

**Ecoregion:** Pittsburgh Low Plateau

**Figure 1.** LMU acreage by land cover categories from the National Land Cover Dataset for the entire LMU



A variety of habitats makes this LMU excellent for wildlife of all kinds.

**Table 2.** Miles of roads by category on state forest land in this LMU. Road categories are described on p. 199 of the 2016 SFRMP.

| Road Category            | Total Miles |
|--------------------------|-------------|
| Z1 - Public Use Road     | 1           |
| Z3 - Administrative Road | 0           |
| Total                    | 1           |

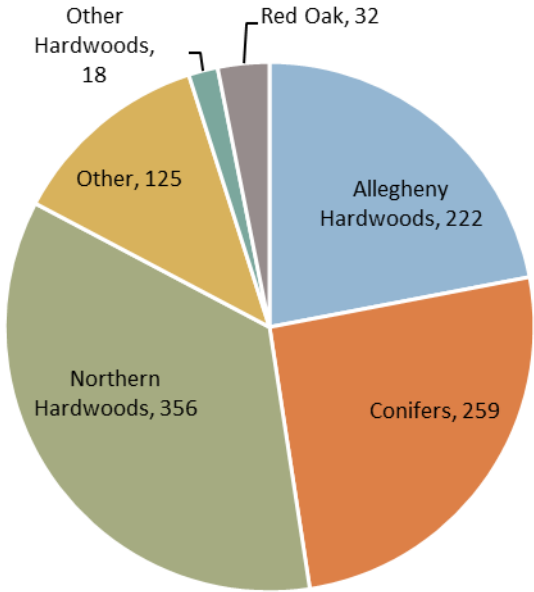
A centrally located township road provided good access to this LMU.

**Table 3.** Miles of trails on state forest land in this LMU open to various types of recreational use. Note that miles are not additive, and a single trail may be open to multiple use types. Shared-use trails, which make up the majority of trails on state forest land, are open to hiking, biking, horseback riding, and cross-country skiing.

| Trail Category           | Total Miles |
|--------------------------|-------------|
| Hiking                   | 2           |
| Biking                   | 0           |
| Equestrian               | 0           |
| X-Skiing                 | 1           |
| ATV I                    | 0           |
| ATV II                   | 0           |
| Snowmobile/<br>Joint Use |             |
| Road                     | 0           |

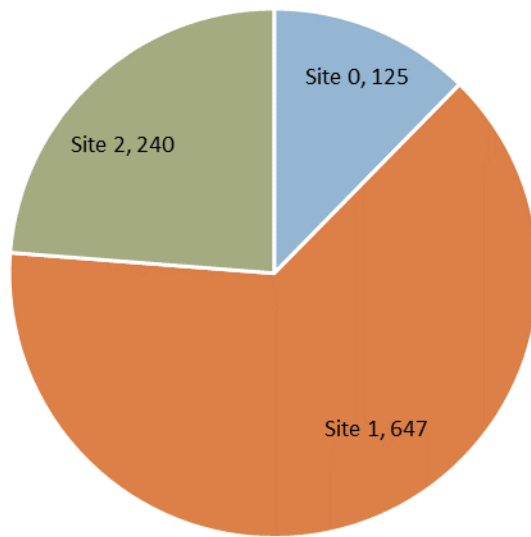
Developing more recreational trails is a goal in this LMU.

The North Country Trail runs through this LMU for approximately 2 miles.



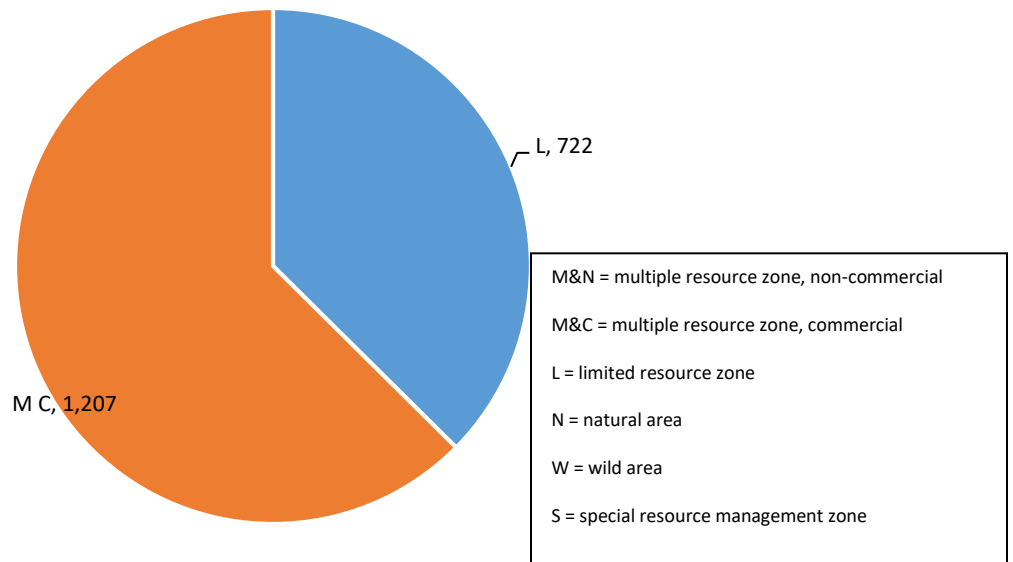
**Figure 2.** Acreage of state forest land in this LMU by aggregated forest type. The forest types are described on p. 108 of the 2016 SFRMP.

There is excellent diversity with only the oak forest type being under represented. This is in contrast to the majority of the Clear Creek State Forest.



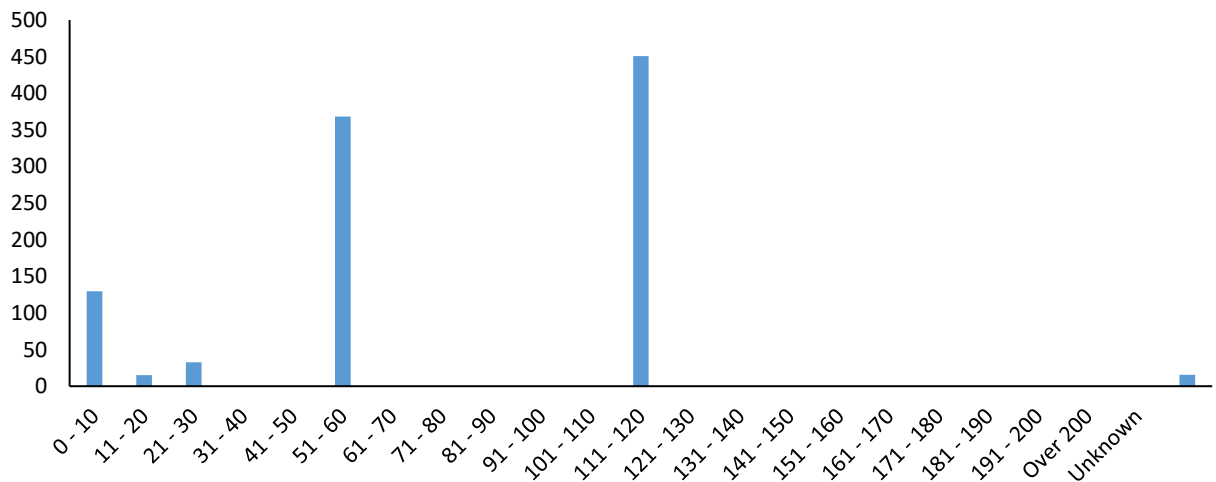
**Figure 3.** Acreage of state forest land in this LMU by site class. Site classes denote the potential quality of the growing site. “Site 0” indicates non-forested lands or forested lands where the vegetation has not yet been typed. Other site classes are described on p. 53 of 2016 SFRMP.

Medium to high quality sites found on most of this forest is are capable of growing a merchantable forest product.



**Figure 4.** Acreage of state forest land in this LMU by management zone. Management zone is dictated by primary land use and land capability. Further descriptions of commerciality and zoning are found on p. 54 of the 2016 SFRMP.

Wetland habitats and limited access is evident with almost half of the acres being non-commercial.



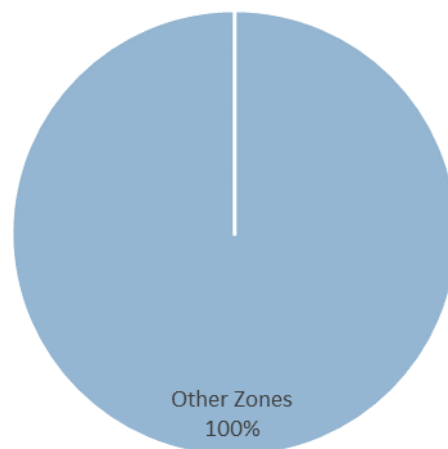
**Figure 5.** Acres of state forest land in this LMU by forest age classes.

Recent timber management practices have created young forest and started to balance the age classes

**Table 4.** Miles of stream by classification within entire LMU. Department of Environmental Protection stream classifications are described in Chapter 93 Water Quality Standards of Title 25 in the Pennsylvania Code.

| Class                    | Total (miles) |
|--------------------------|---------------|
| Undesignated             | 7             |
| High Quality Waters      | 32            |
| Exceptional Value Waters | 1             |
| Scenic Rivers            | 2             |
| <b>Total</b>             | <b>43</b>     |

Maple Creek is a stocked high-quality trout stream and Toms Run is an exceptional value stream.



**Figure 6.** Acres in 2012 of state forest land in this LMU by Recreation Opportunity Spectrum (ROS) classifications. ROS is an inventory system developed by the U.S. Forest Service, to characterize land by types of recreation experiences. ROS is described on p. 42 of the 2016 SFRMP. “Other Zones” refers to Semi-Developed and Developed zones.

## Glossary of Terms and Acronyms

### **District Resource Management Plan – Glossary of Terminology**

**Acceptable Regeneration** – Seedlings or saplings of specific tree species deemed appropriate by forest manager to replace larger trees removed by timber harvesting on an individual stand basis. Appropriate species often include species that currently exist in the overstory, species of desirable trees for the area/region, or native species that can thrive in the ecosystem of the site.

**Acid Deposition** — Acid deposition occurs when acid-forming substances are transferred from the atmosphere to the surface of the earth (into the soil), often through precipitation. The deposited materials include ions, gases, and particles typically resulting from power generation and heavy manufacturing. Research has shown that acid deposition can cause slower growth, injury, or death of trees, particularly sugar maple and red spruce. Acid deposition generally causes stress to trees by interfering with calcium and magnesium nutrition and the physiological processes that depend on these elements.

**Age Class** — An interval into which the age range of trees or forest stands is divided for classification or use (e.g., 0–10 years, 10–20 years).

**Basal Area** — The area of the cross section of a tree stem, including the bark, generally at breast height (4.5 feet above the ground).

**Buffer Treatment (harvesting)** – A management activity that happens within a vegetated strip or management zone of varying length and width maintained along a road, stream, wetland, lake, or other special feature. Buffer areas are managed differently than other zones of state forest land for many reasons, including aesthetics, water quality, or ecological resource protection or enhancement. Some buffers are no-management (i.e. tree cutting) zones, and others require at least a partial canopy be maintained. In general, timber harvesting within buffers is more limited than in other zones and the width of the buffer depends on the feature which is being surrounded.

**Charcoal Hearth** - Excavated area where wood fuel was stacked, covered with soil, and lit on fire to produce charcoal.

**Clearcut** — The removal of the overstory in the absence of advance regeneration. Regeneration may be dependent on natural seed, root suckers, stump sprouts or from artificial plantings. The differentiating factor that sets this cut apart from an overstory removal is that less than 50% of the site is stocked with adequate advanced regeneration and relies on seedlings or sprouts that will become established after the cut. For clearcuts, as with overstory removals on State Forest Lands, 10-20 square feet per acre of basal area must be reserved per acre. Clearcuts on State Forest Lands can be referred to as “clearcuts with residuals.”



**Climate Change** — The long-term fluctuations in trends in temperature, precipitation, wind, and all other aspects of the earth's climate.

**Core Forest Index** - The core forest analysis was based on the density of fragmenting features within a given area, which includes roads, pipelines, well pads, certain large rivers (large enough to show up on NLCD), etc. Based on fragmentation of an LMU, each LMU was given an index score between 0-100, representing the density of fragmenting features with a higher score representing a less fragmented area.

**Crop Tree Thinning** — Crop tree thinning is done for many of the same reasons as improvement cuts but at a much younger, pre-commercial age. The primary reason for entering a stand in the pre-commercial stage versus waiting until merchantable volume can be extracted is to alter the species composition of the stand prior to the most desirable stems losing positions of competitive advantage. No more than 50 crop trees should be selected per acre and a crown-touch release should be used, cutting all trees that touch the crown on a crop tree on three out of four sides. Co-dominant and intermediate trees should be the focus of crown-touch release treatments. Trees in the dominant stage will most likely be in the stand at the time of commercial thinning and most likely already enjoys dominance over its closest competitors.

**Cultural/ Historic Resources** — A site, structure, object, natural feature, or social account that is or was of significance to a group of people traditionally associated with it. A significant cultural resource is defined as one which is listed or eligible for listing in the National Register of Historic Places. Archaeological sites are important in elucidating information about past cultural behavior.

**Damage-causing Agents** - Something that negatively effects ecosystems such as, non-natural or exotic pests, disease and invasive plants, climate change, inadequate forest regeneration, acid mine drainage, acid deposition, waste and littering, habitat fragmentation, overabundant deer populations and wildfire.

**Deer Management Assistance Program (DMAP)** — DMAP is a Pennsylvania Game Commission program that provides additional means for landowners to meet land-use goals by allocating additional antlerless deer tags to reduce deer populations in specific areas.

**Defoliation** – the destruction or causation of widespread loss of leaves usually by insects or disease.

**Early Successional Habitat** – The period in forest development, soon after establishment, in which the growing forest is not yet dominated by tree canopies. This stage is characterized by high productivity, high structural and spatial complexity and provides habitat with vigorously growing grasses, forbs, shrubs and trees that usually require full sun exposure. Early successional habitat provides excellent food and cover for wildlife but needs disturbance to arrest forest succession and prevent the site from progressing to a more mature stage of stand development.

**Ecoregion** — A contiguous geographic area having a relatively uniform macroclimate, possibly with several vegetation types, and used as an ecological basis for management or planning.

**Ecosystem** — A conceptual unit comprised of abiotic factors and biotic organisms interacting with each other and their environment, having the major attributes of structure, function, complexity, interaction and interdependency, temporal change, and no inherent definition of spatial dimension.

**Ericaceous Plants** – Plants in the heath family, such as mountain laurel, rhododendron, and blueberry, that do not grow well in alkaline or basic soils (soils that have a high pH).

**Even-aged Stand** - is a given area of a forest in which the trees are within 20 percent of a given age, relative to the rotation length. Rotation length is the segment of time that forest trees are grown before they are cut, and a new regeneration cycle starts.

**Extirpated** — A species is eliminated from a certain geographic area, while it still exists elsewhere.

**Fee Simple Ownership** — An ownership situation whereby the landowner owns both the surface and subsurface rights.

**Fire Adapted Ecosystem** – Natural communities or ecosystems that have evolved with a regular fire interval and can rebound readily and benefit from fire that is consistent with the regimes to which they are adapted. A “fire regime” describes the frequency at which fires in a given forest type typically burn, the season(s) in which they burn, and the amount of vegetation killed.

**Fire Dependent** – Natural communities or ecosystems requiring one or more fires of varying frequency, timing, severity, and size to achieve optimal conditions for population survival or growth.

**Forest Fragmentation** — The process by which a forest landscape is converted into islands of forest within a mosaic of other land uses.

**Forest Type** – A category of forest community usually defined by its vegetation, particularly dominant vegetation as based on percentage cover of trees. All delineated stands on State Forest Land are coded with a ‘forest type’. Most vegetated types are based on the plant community types recognized in *Terrestrial & Palustrine Plant Communities of Pennsylvania 2<sup>nd</sup> Ed.* Non-vegetated types are based on specific anthropogenic use. See the Bureau of Forestry’s *STATE FOREST RESOURCE DESIGNATIONS, CLASSIFICATIONS AND TYPING MANUAL* for more information

**Fully Stocked** – A quantitative measure of the area occupied by trees, usually measured in terms of well-spaced trees or basal area per hectare, relative to an optimum or desired level of density. A classification of forest land in terms of potential annual cubic-foot volume growth per acre at culmination of mean annual increment in fully stocked natural stands. Stocking is a relative concept - a stand that is overstocked for one management objective may be understocked for another.

**Group Selection** — A treatment in which the desired outcome is to create an uneven-aged or all-aged stand structure over time by performing small group overstory removals or clearcuts, creating patches of younger trees. Through time, the entire stand is removed in groups (3 or 4 harvests spaced 20–30 years apart) creating patches of several age classes throughout the stand.

**Habitat Diversification** — The process by which a forested landscape is broken into a mosaic of seral or successional stages of vegetation types, through management practices and/or natural processes, for utilization by a diversity of organisms.

**High Canopy** — The uppermost vegetative layer of a mature forest. High-canopy species, such as oaks and hickories, have the potential to form the dominant overstory layer of the forest. Species that would NOT be considered high-canopy species include trees that reach their full potential in the understory or mid-canopy layers, such as dogwood or striped maple.

**General Permits (GP)** – Department of Environmental Protection (Department) permits for Chapter 105 Wetland and Waterway Obstruction and Encroachment.

**Improvement Cutting** — An intermediate treatment (after establishment of the new stand and prior to final harvest) is conducted to remove trees that will improve residual stand composition and improve residual tree quality, and where the intention of the harvest is not to establish natural regeneration. The goal of this treatment is to expedite growth of higher quality trees by allowing more sunlight and nutrients to residual trees by reducing competition. This is a non-reproductive treatment and the stand's residual basal area should be at least B level stocking or greater. The difference between this and a crop tree treatment is that this type of treatment is performed later in the rotation and through a commercial sale.

**Intermediate (harvest)** – A timber harvest to enhance growth, quality, vigor, and composition of a stand of trees after establishment or regeneration and prior to final harvest.

**Invasive Insects** - is an insect that is not native to a specific location (an introduced species), and that has a tendency to spread to a degree believed to cause damage to the environment.

**Invasive Plants** — Non-native plant species that grow quickly and aggressively, spreading and displacing other native plants. Their establishment causes or is likely to cause economic, environmental or human harm. Invasive plants are usually introduced by people either accidentally or on purpose, into a region far from their native habitat.

**Iron Furnace** - A historic type of blast furnace that is used for smelting to produce industrial metals, generally pig iron, but also others such as lead or copper. Most iron furnaces used large amounts of wood charcoal as fuel.

**Landscape** — A land area of generally large size and commonly a mosaic of land forms and plant communities irrespective of ownership or other artificial boundaries.

**Natural Area** — A Natural Area is a state forest zone that is an area of unique scenic, historic, geologic or ecological value that will be maintained in a natural condition by allowing physical and biological processes to operate, usually without direct human intervention. They are set aside to provide locations for scientific observation of natural systems, to protect examples of typical and unique plant and animal communities, and to protect outstanding examples of natural interest and beauty.

**Natural Regeneration** — A newer age class of trees created from natural seeding, sprouting, or suckering that will serve to replace trees removed from the canopy, either through aging or harvesting.

**Overstocked** — Is the state of having too many trees in a forested area for the most efficient growth, usually measured in terms of well-spaced trees or basal area. A desirable level of stocking is often considered that which maximizes timber production.

**Overstory** — The portion of the trees, in a forest of more than one story (stratum), forming the upper most canopy layer.

**Overstory Removal** — The complete removal of the overstory to release established advanced regeneration. The differentiating factor between this cut and a “clear cut,” is that advanced regeneration is present and established with at least 50% stocking of the site. On State Forest Lands, 10-20 square feet of basal area per acre must be retained. Overstory removals on State Forest Lands are referred to as “Overstory Removals with Residuals”.

**Pennsylvania Conservation Explorer (Explorer)** — An online tool designed to facilitate conservation planning and environmental review (PNDI) for threatened and endangered species, species of special concern, and other natural resources of concern. The environmental review portion of Explorer screens projects for potential impacts to species under the jurisdiction of PA Game Commission, PA Fish and Boat Commission, PA DCNR, and the US Fish and Wildlife Service. All silviculture and land management activities should be submitted through the PNDI system. The purpose of this system is to call attention to the forester that species of concern, threatened or endangered nature are nearby or within the project area.

**Pennsylvania Natural Heritage Program** — The Pennsylvania Natural Heritage Program (PNHP) is a member of NatureServe, an international network of natural heritage programs that gather and provide information on the location and status of important ecological resources (plants, vertebrates, invertebrates, natural communities and geologic features). Its purpose is to provide current, reliable, objective information to help inform environmental decisions. PNHP information can be used to guide conservation work and land- use planning, ensuring the maximum conservation benefit with the minimum cost. PNHP manages PNDI (see above).

**Pennsylvania Scenic Rivers Program** — Scenic river designations are intended to preserve the primitive qualities the natural, and aesthetic values of a river and to protect the existing character and quality of both the river and its adjacent land environment. They shall be free-flowing and capable of, or under restoration, to support water-cased recreation, fish and aquatic life. The view from the river or its banks shall be predominately wild but may reveal some pastoral countryside. The segment may be intermittently accessible by road. The Pennsylvania Scenic Rivers Act of 1982 authorized the statutory designation of outstanding aesthetic or recreational rivers.

**Recreational Opportunity Spectrum Continuum (ROS)** — ROS is an inventory system developed by the U.S. Forest Service, to characterize land by types of recreation and experiences. This version adopted by the Bureau of Forestry defines five recreation classes for the state forests (primitive, semi-primitive non-motorized, semi-primitive, semi-developed, developed).

**Regeneration** — Seedlings or saplings existing in a stand or the act of renewing tree cover by establishing young trees naturally or artificially.

**Regeneration period** — The time between the initial regeneration treatment and the successful re-establishment of a new age class by natural means, planting, or direct seeding.

**Reserve or Residuals trees** — Trees, pole sized or larger, retained after an intermediate or partial timber harvest of a stand.

**Rotation** — In even aged systems, the period between regeneration establishment and final cutting.

**Salvage Harvest** — A timber harvest in which only dead and dying trees are harvested while they still retain a degree of economic value, or in conjunction with other treatments in which the goal is both economic salvage and a silvicultural goal such as salvage-overstory removal, salvage-shelterwood, salvage-improvement, etc. Timber sales in which 20% or more of the volume being removed is dead or dying should be classified as salvage, or salvage along with any other treatment being implemented.

**Seed Tree Cut** — The attempted establishment of a new stand from a partial overstory removal and retention of scattered trees for genetically superior seed production and seedling establishment. Usually less than 40 BA is retained to allow almost full exposure of a site to sunlight. Species that are shade intolerant and wind dispersed usually benefit under this type of cut. Once advanced regeneration is established the seed trees are removed.

**Severed Ownership** — an ownership situation whereby the surface landowner has either partial ownership of the subsurface or the subsurface is owned completely by another entity.

**Shade Tolerance** — The relative capacity of a plant to become established and grow beneath overtopping vegetation, where sunlight is fully or partially obscured.

**Shelterwood (harvest)** — The attempted establishment of a new cohort of natural regeneration from the partial removal of the overstory. A shelterwood harvest may be a single treatment or a series of cuts to ensure that adequate seed source is retained, and light levels are manipulated to allow the establishment or promotion of a target species or group of species. The essential characteristic is that the new stand is being established naturally or artificially under the overstory or the “shelter” of the original stand. The characteristic difference between this cut and a seed tree cut is that a relatively contiguous canopy is retained (approximately  $\geq 40$  BA) and most often species

regenerated under this system are moderate to shade tolerant species. Once advanced regeneration is established, the overstory is removed.

**Single Tree Selection (harvest)** — A harvest in which the desired goal is to create an all-aged stand by removing a uniform number of trees from each age class in an uneven-aged stand or size class in an even-aged stand. This leaves an inverse j-shaped curve for diameter distribution, creating space for the establishment of new seedlings and increased growth of remaining trees.

**Silvicultural System** — A planned process whereby a stand is tended, harvested, and re-established. The system name is based on the number of age classes and/or the regeneration method used.

**Site Class** — A classification of growing site quality, expressed in terms of ranges of dominate tree height at a given age or potential mean annual increment at culmination. For the Bureau of Forestry, site classes are numbered 1 (the best), 2 and 3 (the poorest). These classes are designated as follows:

**0 Non-Forest**

**1 Site 1:** Characterized by moist, well-drained, fairly deep soils that usually occur in protected coves, along streams, or in bottomlands that remain moist throughout the year. On northern exposures, Site 1 may extend higher up a slope than on southern exposures because of more favorable soil moisture conditions. Dominant and codominant total tree heights have the potential to average > 85 feet at maturity.

**2 Site 2:** Characterized by soil intermediate in moisture, depth, drainage and fertility that may dry-out for short periods during the year. This site is usually located on slopes between the ridge tops and the coves and bottomlands. Dominant and codominant total tree heights have the potential to average > 65 feet but < 85 feet at maturity.

**3 Site 3:** Characterized by shallow, rather dry, stony or compact soils which usually occur on ridges or broad flat plateaus. Dominant and codominant total tree heights average < 65 feet at maturity.

**Site Index** — a species-specific measure of actual or potential forest productivity expressed in terms of average height of trees included in a specific stand component at a specific index or base age. Site index curves are created for different regions to show the total height expectations for a certain species given the site conditions (index) and the age of the tree or stand.

**Stand** — A contiguous group of trees sufficiently uniform in age class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit.

**State Forest Environmental Review** — SFER is the process used by the bureau to assess impacts to a variety of forest resources for projects that may or will disrupt, alter or otherwise change the environment.

**Stems Per Acre** – a standard measure of the density of trees within a given area, which is given as an average number of stems on an acre. Stem is considered the trunk of an individual tree.

**Stocking Level** – An indication of growing space occupancy relative to a pre-established standard.

**Succession** – The gradual supplanting of one community of plants by another; the aging of the forest from young to mature.

**Sustainability** – The capacity of forests, ranging from stands to ecoregions, to maintain their health, productivity, diversity, and overall integrity, in the long run, in the context of human activity and use.

**Systemic Insecticides** – Pesticide that is absorbed by and permeates some or all host tissues and is more toxic to the target insects and pathogens than to host.

**Two-Aged Harvest** – The final overstory removal or clearcut in a stand in which a significant portion of the stand will be retained until the next rotation. Usually 20 to 30 square feet of BA is retained in oak stands and 10 –20 BA in northern hardwood stands. The residual stand is not removed upon successful regeneration, but instead carried as an older age class (creating two distinct age classes on the same site) well into the next rotation, and usually removed before the next age class reaches maturity.

**Two-Aged Shelterwood** – This treatment is a preparatory cut for a two-aged harvest. A shelterwood treatment or treatments performed in a stand to establish or promote advanced regeneration, once there is seedling establishment a two-aged harvest will occur.

**Under Stocked** – Is the state of not having enough trees in a forested area for production of most board feet volume in standing trees measured in terms of basal area. A desirable level of stocking is often considered that which maximizes timber production.

**Uneven-aged stand** - is a given area of a forest in which the trees are having at least three distinct tree-age classes. Classic uneven-aged forest management aspires to perpetuate an all-aged stand, with many young trees and progressively fewer older trees.



## District Resource Management Plan – Glossary Acronyms

### A

**ADA** – American Disabilities Act  
**ALB** – Asian Longhorn Beetle  
**AML** – Abandoned Mine Land  
**ANF** – Allegheny National Forest  
**APHIS** – Animal and Plant Health Inspection Service  
**ATFS** – American Tree Farm System  
**ATV** – All Terrain Vehicle

### B

**BMP** – Best Management Practice  
**BOF** – Bureau of Forestry  
**BRC** – Bureau of Recreation and Conservation  
**BSP** – Bureau of State Parks

### C

**CAR** – Corrective Action Request  
**CARS** – Cooperative Accomplishment Report System  
**CCC** – Civilian Conservation Corps  
**CFI** – Continuous Forest Inventory  
**CFM** – Cooperative Forest Management  
**CHR** – Cultural Historical Resource  
**CLI** – Conservation Landscape Initiative  
**CSP** – Conservation Security Program  
**CWD** – Chronic Wasting Disease

### D

**DCED** – Department of Community and Economic Development  
**DCNR** – Department of Conservation and Natural Resource  
**DEP** – Department of Environmental Protection  
**D & G** – Dirt and Gravel

**DGS** – Department of General Services

**DMAP** – Deer Management Assistance Program

## **E**

**EAB** – Emerald Ash Borer

**E & S** – Erosion and Sedimentation

**EAC** – Environmental Advisory Council

**EDRR** – Early Detection Rapid Response

**EHS** – Hemlock Elongated Scale

**EMA** – Emergency Management Agency

**EPA** – Environmental Protection Agency

**EV** – Exceptional Value

**EQIP** – Environmental Quality Incentives Program

## **F**

**FDC** – Facility Design and Construction

**FED** – Federal

**FEMA** – Federal Emergency Management Agency

**FEPP** – Federal Excess Personal Property

**FFA** – Future Farmers of America

**FFP** – Forest Fire Protection

**FFW** – Forest Fire Warden

**FHM** – Forest Health Monitoring

**FIA** – Forest Inventory and Analysis

**FIMS** – Forest Information Management System

**FMP** – Forest Management Plan

**FPM** – Forest Pest Management

**FS** – Forest Service

**FSA** – Farm Service Agency

**FSC** – Forest Stewardship Council

**FSP** – Forest Stewardship Plan

## **G**

**GIS** – Geographic Information System

**GM** – Gypsy Moth

**GP** – General Permit

## **H**

**HAM** – Harvest Allocation Model

**HCVF** – High Conservation Value Forest

**HDC** – Hardwood Development Council

**HQ** – High Quality

**HWA** – Hemlock Woolly Adelgid

## **I**

**ICS** – Incident Command System

**IMT** – Incident Management Team

**IPCC** – Intergovernmental Panel on Climate Change

**IPM** – Integrated Pest Management

**IQS** – Incident Qualification System

**ISA** – International Society of Arboriculture

**ITC** – Instructor Training Course

## **L**

**LiDAR** – Light Detection and Ranging

**LOA** – Letter of Authorization

**LWCF** – Land Water Conservation Fund

**LMU** – Landscape Management Unit

## **M**

**MBF** – 1000 Board Feet

## **N**

**NAASF** - Northeastern Area Association of State Foresters

**NAI** – Natural Areas Inventory

**NASF** – National Association of State Forest  
**NGO** – Non-Government Agency  
**NPS** – National Parks Service  
**NRCS** – Natural Resource Conservation Service  
**NTFP** – Non-Timber Forest Products  
**NWTF** – National Wild Turkey Federation

## **O**

**OGIT** – Oil and Gas Tracking System  
**OGM** – Oil and Gas Management  
**OHV** – Off Highway Vehicle

## **P**

**PACD** – Pennsylvania Association of Conservation Districts  
**PAFS** – Pennsylvania Forest Stewards  
**PA-IMT** – Pennsylvania Incident Management Team  
**PASA** – Pennsylvania Association for Sustainable Agriculture  
**PCC** – Pennsylvania Conservation Corps  
**PDA** – Pennsylvania Department of Agriculture  
**PEMA** – Pennsylvania Emergency Management Agency  
**PennDOT** – Pennsylvania Department of Transportation  
**PFA** – Pennsylvania Forestry Association  
**PFBC** – Pennsylvania Fish and Boat Commission  
**PFPA** – Pennsylvania Forest Products Association  
**PGC** – Pennsylvania Game Commission  
**PHMC** – Pennsylvania Historical and Museum Commission  
**PHS** – Pennsylvania Horticulture Society  
**PILT** – Payment in lieu of Taxes  
**PLT** – Project Learning Tree  
**PNDI** – Pennsylvania Natural Diversity Inventory  
**PNHP** – Pennsylvania Natural Heritage Program  
**PPFF** – Pennsylvania Parks and Forest Foundation  
**PSP** – Pennsylvania State Police

**PSSA** – Pennsylvania State Sportsmen’s Association

**PSU** – Penn State University

## **R**

**RAC** – Recreation Advisory Committee

**RAWS** – Remote Automated Weather Station

**RC&D** – Resource Conservation and Development

**RCF** – Rural and Community Forestry

**RGS** – Ruffed Grouse Association

**RMC** – Resource Management Center

**ROS** – Recreation Opportunities Spectrum

**ROW** – Right of Way

**RPF** – Rare Plant Forum

**RTE** – Rare Threatened Endangered

**RUA** – Road Use Agreement

**Rx** – Prescribed

## **S**

**SAA** – Special Activities Agreement

**SAF** – Society of American Foresters

**SAR** – Search and Rescue

**SCORP** – Statewide Comprehensive Outdoor Recreation Plan

**SFER** – State Forest Environmental Review

**SFI** – Sustainable Forestry Initiative

**SFL** – State Forest Land

**SFO** – State Forest Officer

**SFRMP** – State Forest Resource Management Plan

**SLF** – Spotted Lantern Fly

**STC** – Shade Tree Commission

## **T**

**TACF** – The American Chestnut Association

**TCUSA** – Tree City United States of America

**TIMO** – Timber Investment Management Organization

**TMDL** – Total Maximum Daily Loads

**Topo Geo** – Topographical and Geologic Services

**TPO** – Timber Products Output Survey

**TSP** – Technical Service Provider

**TU** – Trout Unlimited

## **U**

**USDA** – United States Department of Agriculture

**USFS** – United States Forest Service

**USFWS** – United States Fish and Wildlife Service

**USGS** – United States Geological Survey

## **V**

**VFD** – Volunteer Fire Department

**VUM** – Visitor Use Monitoring

## **W**

**WOA** – Woodland Owner Association

**WMU** – Wildlife Management Unit

**WNA** – Wild and Natural Areas

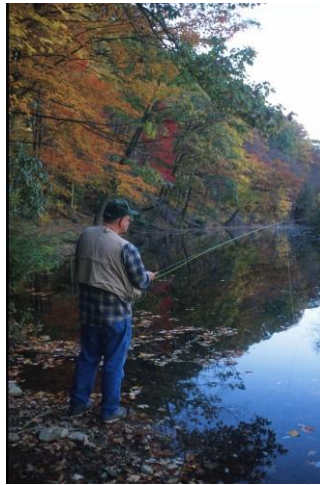
**WPC** – Western Pennsylvania Conservancy

**WUI** – Wildland Urban Interface

## Appendices

### Appendix A - District Interpretive Plan

# Clear Creek State Forest District: Interpretive Plan



Date Completed: 14 September 2016

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## Table of Contents

Introduction

DCNR and Bureau of Forestry Missions and Key Messages

State Forest Resource Management Plan: Communications Management Principle

Site Overview

- Introduction
- History

Purpose and Goals

- Purpose
- District Interpretive Goals

Objectives

- Outputs, Outcomes & Impacts

Audiences and Market Consideration

- Current Visitors
- Current Web Visitors
- Key Audiences
- Future Markets & Trends

Theme & Subthemes

Current Interpretation

- Personal
- Non-personal

Issues, Challenges and Opportunities

Recommendations

- Personal
- Non-personal

Evaluation Strategies

Implementation Plan

References

## Introduction

It is the intent of the Bureau of Forestry to have an interpretive plan in place within each state forest district. Once completed, this plan can stand alone or be placed as an addendum to the District Resource Management Plan. This plan is directly linked to the State Forest Resource Management Plan through key messages and guiding principles.

### DCNR Mission

We conserve and sustain Pennsylvania's natural resources for present and future generations' use and enjoyment.

### Vision

As Pennsylvania's leader and chief advocate for conservation and outdoor recreation, we will inspire citizens to value their natural resources, engage in conservation practices and experience the outdoors.

### Goals

- Improve stewardship and management of state parks and forests
- Promote statewide land conservation
- Build and maintain sustainable and attractive communities
- Create outdoor connections for citizens and visitors

### DCNR Key Messages

- Natural resources are critical to our health, economy, and quality of life.
- Everyone uses and has the opportunity to enjoy Pennsylvania's vast natural resources.
- DCNR leads everyday efforts to conserve Pennsylvania's natural resources and connect people to the outdoors.
- The future of Pennsylvania's natural resources depends on you.

Interpretation is defined as a mission-based communication process that forges emotional and intellectual connections between the interests of the audience and the meanings inherent in the resource. The interpretive plan is a goal driven process that helps us achieve our mission, protect the resource and provide visitors with the best possible interpretive service.

This State Forest District Interpretive Plan uses a thoughtful planning process to identify the stories, management issues and resources that are specific to each state forest district. Completed plans will help us determine which communication strategies are best suited for achieving our goals and setting priorities will help allocate funds for interpretive projects. Resource conservation requires public understanding and support. Interpretation is one tool to help us achieve that goal.

## DCNR and Bureau of Forestry Missions and Key Messages

Both the department and bureau missions and key messages should be present in our interpretive efforts. Keep these in mind as you plan your interpretive projects. If an interpretive project does not address our mission or contain a key message, it should not be considered.

### **The Bureau of Forestry's Mission...**

...is to ensure the long-term health, viability and productivity of the commonwealth's forests and to conserve native wild plants.

### **Bureau of Forestry's Key Messages:**

The Bureau of Forestry has developed a set of forest-related key messages that complements the department's communications efforts. The bureau considers and uses these key messages when developing communications products.

#### **Natural resources are critical to our health, economy, and quality of life.**

- Forests are Pennsylvania's principal land use.
- Forests provide vital services to society. They clean our air, purify our water, provide habitat for plants and animals, and support key ecological processes.
- Forests provide a renewable source of wood products to society.

#### **Everyone uses and has the opportunity to enjoy Pennsylvania's vast natural resources.**

- Healthy forests benefit all citizens, no matter where they live.
- Forests provide nearly boundless opportunities for healthful recreation.
- Forests serve as a source of inspiration and wonder.
- There is a forest to explore near you.

#### **DCNR leads everyday efforts to conserve Pennsylvania's natural resources and connect people to the outdoors.**

- DCNR Bureau of Forestry leads Pennsylvania in forest and native wild plant conservation and stewardship.
- DCNR Bureau of Forestry seeks to foster an awareness of the forests' many uses and values and inspire people to conserve them.

#### **The future of Pennsylvania's natural resources depends on you.**

- People and communities every day shape the future of Pennsylvania's forests.
- Sustaining our forests and associated values depends on wise stewardship.
- We have a responsibility to manage our forests for current and future generations.

## Communications Management Principle

The citizens of Pennsylvania appreciate the forests of Pennsylvania and their resources and values and are engaged in the issues that affect them.

| Goals  | Objectives   |
|--|--|
| <b>1. To provide education and interpretive opportunities regarding the values, services, and benefits of sustainable forest management.</b> | <b>1.1</b> Promote Project Learning Tree with Pennsylvania educators and youth leaders through workshops and material support.   |
|  | <b>1.2</b> Promote forestry and conservation through public education and outreach such as the statewide Envirothon, natural gas tours, ECO Camp, and other public programming partnerships. |
|  | <b>1.3</b> Provide forest demonstration areas throughout the state forest system that show forest management practices.  |
|  | <b>1.4</b> Create statewide and district interpretive plans and increase the use of interpretive resources.  |
|  | <b>1.5</b> Promote a public stewardship ethic regarding the commonwealth's forests and wild plant resources.   |
|  | <b>1.6</b> Develop state-of-the-art resource management centers to house educational displays and stimulate interest in forest conservation.   |
| <b>2. To provide customer service and information that promote the use and enjoyment of the state forest system.</b>                         | <b>2.1</b> Maintain a steady and available supply of our public use maps, guides, and printed materials.   |
|  | <b>2.2</b> Continually update and utilize electronic media, providing information in an engaging format on the bureau and its work.  |
| <b>3. To engage the public and consider input in state forest management decisions.</b>  | <b>3.1</b> Utilize advisory committees to engage stakeholders.   |
|  | <b>3.2</b> Provide information on forests, forest issues, and native wild plants.  |
|  | <b>3.3</b> Plan and coordinate public meetings on specific bureau topics including the SFRMP process and shale-gas management as well as issues of local interest at the district level.     |
|  | <b>3.4</b> Monitor and respond to social media questions and comments.   |
|  | <b>3.5</b> Coordinate responses to public inquiries on state forest management topics.   |

## State Forest Resource Management Plan: Communications Management Principle

This guiding principle for Communication Management is established in our State Forest Resource Management Plan and should assist in setting the direction of interpretive efforts.

# Overview of the Clear Creek State Forest

## Introduction

The Clear Creek State Forest, 16,526 acres, is located principally in Jefferson, Forest, Clarion and Venango Counties. The state forest contains 9,800 acres in Northern Jefferson County, 3,184 acres in Venango County, and 1,016 acres in southern Forest County. The district manages a 45 acre tract in Mercer County. The acquisition of 1,600 acres from Lyme Timber Company in 2008 and the exchange with the Pennsylvania Game Commission in 2010 for lands along the Clarion River in located in Clarion County added an additional 2,481 acres.

## History

Prior to Europeans settling Pennsylvania, dense forests nearly covered the entire state, with the exception of a few natural meadows in the lowlands and scattered rocky areas in the highlands. These seemingly inexhaustible timber tracts provided the early settlers with raw materials to produce charcoal for the iron and steel industries, ties for railroads, fuel wood and chemical distillation wood, as well as lumber for homes, buildings, furniture, barrels and boxes. The settlers never envisioned that such forests could ever disappear. However, as Pennsylvania's increasing population turned forest land into farms, and as expanding industries consumed more and more wood, the amount of standing timber grew smaller. Then, in the late 1800s, awareness began to grow that the forests were not inexhaustible. Large tracts of land once covered with virgin forests had been cutover and abandoned by the owners. Forest fires burned uncontrolled throughout much of the cutover area. Between 1860 (when Pennsylvania led the nation in lumber production) and 1900, (when it had to import lumber to fill its needs) various efforts were made to halt the depletion of the forests. The future wood supply and the restoration of once-forested areas greatly concerned conservation-minded citizens.

In 1887, the Pennsylvania General Assembly authorized the governor to appoint a committee to examine and consider the subject of forestry in Pennsylvania and report its findings at the next regular session of the legislature. In 1888 a Governor's Commission was appointed to study the forest situation. Authorized by the legislature once again, the governor appointed a second commission in 1893. As a result of these studies, in 1895, Dr. J. T. Rothrock was appointed Commissioner of Forestry in the newly created Division of Forestry in the Pennsylvania Department of Agriculture.

In 1897 the legislature passed an act authorizing the purchase of unseated lands for forest reservations, thus marking the beginning of the Pennsylvania State Forest System. This act provided for the acquisition of not less than 40,000 acres in the headwaters of each of the main rivers of Pennsylvania, mainly the Delaware, Susquehanna, and Ohio, providing the land selected shall be of a character better suited to the growth of trees than to mining or agriculture, and that 50% of the area have an elevation of not less than 600 feet above sea level. In 1898, 7,500 acres of land in Clinton County became the first land purchased under this new act.

The Clear Creek State Forest was founded on September 1, 1920, with the district office in Clarion where it has remained. The office occupied two small rooms in the present Crooks building at the corner of Main and Sixth Avenue. In 1948, the office was moved into a two-story frame house at 401 Wood Street. This same year the state was divided into four regions. The western region comprised the Clarion, Warren, Johnstown, Uniontown and Ligonier Districts. Regional offices occupied the first floor and the district office occupied the second floor of the Wood Street Building. Secretary Samuel Lewis abolished the regions in 1953. The following year, the office was moved to 58 S. 7th Avenue, and in October 1965, it was moved to the present location formerly occupied by the Western Pennsylvania Artificial Breeders Association.

R. Y. Stuart, Deputy Commissioner, suggested the name Kittanning after an American Indian settlement along the Allegheny River. Since the city of Kittanning lies more than 40 air miles southeast of the forest, the name is somewhat misleading. Most local residents are familiar with the two largest tracts in Jefferson County, which comprise the earliest purchases. They have referred to the area for years as the "Clear Creek State Forest," after a stream flowing through one of these holdings. Because of this, on July 2, 1980, all of the publicly-owned forest lands in the Kittanning District were officially given that name. At that time, the tract in Venango County had not yet come under Bureau of Forestry administration.

The first section of the forest purchased was the 3,200-acre Frazier tract, bought for \$6,880 in January 1919. Most of compartments 6, 7, and 8 came from this purchase.

The next acquisition was the 2,481-acres purchased from Reuben Baughman in 1920. All of compartment 2 and all of compartment 3 lying in Polk Township came from this purchase.

Two tracts totaling 673-acres were purchased from M. M. Fisher et. al. in 1928. One tract makes up the southernmost section of compartment 6. The other is now part of compartment 7.

All of compartment 4 and 5 were obtained through the 2,419-acres purchased from J. M. Buzard in 1928. A small part of this purchase lying just south of the Spring Creek Road is now part of compartment 3. In 1929, two small tracts were added. One hundred six acres were purchased from Wallace and Hughes and another 133-acres from John M. Wallace. The latter piece lies in compartment 8 along Pine Run.

Three hundred sixty-three acres were purchased from the Susquehanna Chemical Co. in 1949. This tract lies in compartment 7 and includes the area commonly called the Corbett fields.

The 1,012-acre tract in Forest County that makes up compartment 1 was purchased in 1952 from Walter S. Haskell, et. al.

About 1963, 998-acres of the Clear Creek State Forest were set aside for the establishment of Clear Creek State Park. Sometime after 1964, the area was expanded when the Bureau of Parks purchased 210 acres of land from H. W. Miller. The Bureau of Forestry was responsible for the operation of the Park until about 1965.

In 1970, an interior holding of 105-acres was purchased from Howard Gaydosh. It is now part of compartments 3 and 4.

A 433-acre tract originally obtained in 1949 from the Cook Forest Association was transferred from the Bureau of State Parks to the Bureau of Forestry in 1971. This tract is now compartment 9.

The Lewis Painter exchange, completed on April 10, 1980, added two acres to the southeastern corner of compartment 8.

On July 18, 1980, an area of 3,184-acres, which was originally proposed for a state park, was also transferred to the Bureau of Forestry from the Bureau of State Parks. Purchase of the 22 parcels making up this tract was done by DER through direct settlements with the landowners, and took place from October 28, 1970, to November 7, 1973. The total cost to the Commonwealth was \$392,275. This tract comprises compartments 10 and 11.

The 863 acre Laurel Fields acquisition in August 2006 consisted of two separate parcels in Heath and Polk townships, Jefferson County. The first parcel is 722 acres that shares two miles of contiguous boundary with existing State Forest lands in Compartment 2. The second parcel is a 141 acre in-holding known locally as the "Laurel Fields" because of the large native mountain laurel plants growing in an abandoned field in the southern end of the property. The Department provided The Conservation Fund \$1,232,838.00 from the Growing Greener II Bond to purchase the land from the Headwaters Investments Group managed by Forest Investments Associates. Additional funding for the purchase was provided by the King Mellon Foundation. The Conservation Fund then transferred the property to the Bureau of Forestry.

In February 2008 the Clarion River Tract acquisition of 1,600 acres of land and an additional 1,700 acres of Timber Rights was purchased from the Lyme Timber Company through the Western Pennsylvania Conservancy. The funding for the purchase was provided again by GGII and the King Mellon Foundation.

On 24 June, 2010 a land exchange with the Pennsylvania Game Commission was finalized that transferred 4,753 acres of Game Land 283 along the Clarion River for 4,248 acres of State Park land at Pymatuning State Park. The exchange consolidated the previous Lyme Timber Company Tracts. An agreement between State Parks and the Bureau of Forestry designated management responsibility of the Clarion River Corridor lands below the 1400 foot contour to Cook Forest State Park with the above lands to the Clear Creek State Forest.

## **Key Resources and Events**

Beartown Rocks Vista in Jefferson County off Corbett Road is a popular destination. The Kennerdell Tract along the Allegheny River in Venango offers recreational opportunities and historical sites. There are 25 miles of hiking, equestrian, and mountain bike trails on the 3,000 acre tract. The Dennison Run Vista offers a scenic view of the river valley. There is an iron furnace at Bullion Run and old oil well site along the river. Danner Campground offers a stop for canoeists.

Joint management of the Clarion River Tract in Clarion County, to promote recreational opportunities by the improvement and maintenance of public access and trail system.

## **Purpose and Goals**

### **Purpose**

### **District Interpretive Goals**

- Encourage exploration and participation in low impact recreation within the Clear Creek State Forest.
- Foster an awareness and encourage sustainable use of resources by communicating, promoting and modeling good stewardship and best management practices
- Support effective partnerships with local communities that benefit the community, the resource and the visitor.
- Develop engaging experiences that promote intellectual and emotional connections between the resource and visitors.
- Communicate the ongoing challenges of balancing natural resource use with society's needs, wants and desires.
- To foster an appreciation and understanding of the history of Pennsylvania's forests and their role in our lives.

What we do...

## Objectives (outputs, outcomes and impacts)

The objectives provide a measurable way in which the goals will be accomplished.

### **Outputs:** What Clear Creek State Forest will do for the visitor: “What we do”

Link them back to the goals.

1. Interpret and communicate to the visitor our resource management efforts while maintaining the wild character of the state forest. (Goal 2,4,5,6)
2. Develop at least one program or project with the Jefferson County Conservation District to promote forest stewardship. (Goal 2, 3, 4, 5)
3. Work cooperatively with Brookville Historical Society to interpret the history at the Clear Creek State Forest and Clarion River. (Goal 2, 3, 4, 5)
4. Work cooperatively with Venango Historical Society/Oil Alliance to interpret the history at the Kennerdell Tract and Allegheny River. (Goal 2, 3, 4, 6)
5. Provide and maintain historic, cultural and natural history waysides at Beartown Rocks. (Goal 2, 4, 5, 6)
6. Work with State Parks to increase the variety or recreational program offerings (Goal 1 and 4)
7. Increase the visibility of the state forest by attending one community event where the state forest is promoted. (Goal 1, 3, 4, 5)
8. Work cooperatively with local school districts and universities to serve as an outdoor classroom/laboratory (Goal 2, 3, 4, 5)
9. Develop at least one additional volunteer opportunity. (Goal 3, 6)
10. Develop Volunteer Days for Clear Creek State Forest (perhaps in conjunction with Clear Creek State Park). (Goals 1,3,6)
11. Develop a map pamphlet for hunters showing fences in different Silviculture treatments, OSR, SHWD. (Goals 1,2,4,5,6)
12. Work cooperatively with the American Chestnut Foundation to interpret the American Chestnut. (Goals 1,2,4,6)
13. Interpret and communicate activities through Social Media (Goals 1,2,3,4,5)
14. Increase Interpretive Panels to express the history of Clear Creek State Forest (Goals 2,4,6)
15. Recondition the Iron Furnace and Oil Pumping Station and add Interpretive Panels (Goals 2,4,6)
16. Rehabilitate a Silvicultural Wayside for landowners on the Clear Creek State Forest (Goals 2,3,4)
17. Develop at least one additional Motorized campsite (Goals 1,2,4,5)

...to get the visitor to do...

**Outcomes:** The anticipated short-term action resulting from the above outputs – “What the visitor will do.” Link them to the outputs.

1. Volunteerism will increase by 1% at Clear Creek State Forest (Outputs 1, 7, 9).
2. Litter will decrease by 15%
3. School group visitation will increase by 2%.
4. Visitation will increase by 5%
5. User groups will be more active by 10%
6. Public education of Silviculture will increase by 5%
7. Increase deer harvest by 5% (Output 11).



...to benefit  
Clear Creek  
Forest District  
this way.

**Impacts:** The long-term benefits to the state forest as a result of the above outputs and outcomes – What happens long-term. Link these to outcomes.

1. **Reduced litter will add to aesthetics across Clear Creek State Forest (Outcome 2)**
2. **Volunteer efforts increase which promotes more recreational opportunities within and surrounding Clear Creek State Forest (Outcomes 1, 5)**
3. **Support towards State Forest Operations will increase (Outcomes 8,9,10)**

### **Audiences and Market Considerations**

Who makes up your current audience/visitors? Who are the players involved in the use and stewardship of your state forest? Are there any groups not serviced that you would like to include? Have you provided interpretation for all of your audiences?

- **Current Visitors**
- **Current Web Visitors**
- **Key Audiences**
- **Future Markets and Trends**

### **Theme and Subthemes**

The theme is a central statement that is the guiding message for all interpretation at the state forest. It defines the approach that interpretation will take. If this theme is correctly interpreted through a variety of media, it is the message that a visitors take home. Sub-themes further develop the theme and are the logical progression into storylines. These are the stories that are important to you district. What do you want the visitor to know about your forest district? What message do you want the visitor to take home?

**Central Theme:** Clear Creek State Forest connects the past with the present and will connect the future through sound management of its forest resources. Legacy Tree theme- Recreation, Climate, Water, Green, Youth and Forest and interrelationships between them.

#### **Subthemes:**

Clear Creek State Forest resources will survive for future generations' use and enjoyment through sound resource management and active stewardship.

- - Conservation efforts built on the past set the stage for today's use and enjoyment of Clear Creek State Forest using sound Silviculture, pest management and invasive species management
- Clear Creek State Forest is part of a larger landscape influenced by surrounding communities, State Parks, National Forest and State Game Lands.
- Creating a sense of belonging for visitors will be passed on to future generations.
- Youth Engagement provided by outdoor opportunities.
- Water Protection provided by forests or RFB
- Recreational opportunities on SFL

### **Current Interpretation (personal and non-personal)**

Create an inventory and overview of the programs, waysides, exhibits, brochures, maps, etc., currently offered by this state forest.

- Personal
- Non-personal

### **Issues, Challenges and Opportunities**

Key issues and challenges to interpretation/operations at the site and a list of possible solutions to each of these concerns. Interpretation is a management strategy.

How can you use interpretation to resolve some of your key management issues?

### **Recommendations for Personal (P) and Non-personal (NP) Media**

This section includes the specific descriptions for personal (staffing, programs) and non-personal (exhibits, publications, waysides, etc.) media as well as costs for each recommendation.

This is how you accomplish the objectives and prioritize your interpretive projects and funding.

**This section is linked to the Project Request Sheet/Share Point Site. Your priorities become our priorities.**

| *Priority | *Rec Number | Recommendations (in priority order)                | Corresponding Objectives | Estimated Cost    | Project Lead |
|-----------|-------------|--|--------------------------|-------------------|--------------|
|           |             | <b>Personal Services (P):</b>                      |                          |                   |              |
|           | P1          | Staffing (1 additional)<br>1 salaried-CFM forester |                          | \$42,000/year     | Frank        |
|           | P2          | Interpretive Programs                              |                          |                   | CFM staff    |
|           | P3          | Recreational Programs                              |                          | Some fee programs | Rec Forester |
|           |             | <b>Non Personal Services (NP):</b>                 |                          |                   |              |
|           | NP2         |  |                          |                   |              |
|           | NP3         |  |                          |                   |              |
|           | NP7         |  |                          |                   |              |
|           | NP8         |  |                          |                   |              |
|           | NP9         | Blyson Kiosk's                                     |                          |                   | Frank        |
|           | NP10        | Interpretive Wayside                               |                          |                   | Frank        |
|           | NP22        | Interpretive Brochures                             |                          |                   | Rec Forester |
|           | NP23        | River Road waysides                                |                          | \$15,000          | Rec Forester |
|           | NP24        | Auto Tour<br>Experimental Forest                   |                          |                   | Rec Forester |
|           | NP25        |  |                          |                   |              |
|           | NP27        | Recreation Activity Guides                         |                          |                   | Rec Forester |

|  |      |  |  |  |  |
|--|------|--|--|--|--|
|  | NP28 |  |  |  |  |
|  | NP29 |  |  |  |  |

\*The Priority number and Recommendation Number are needed when requesting an interpretive project from the Communication Section.

### **Evaluation Strategies**

- How did we do?
- These are the methods that will be used to measure the effectiveness in meeting the objectives.
- Is that wayside effective?
- Are there less complaints?
- Review this plan every cycle in conjunction with the District Management Plan and SFRMP to discuss updates and changes needed.

### **Implementation Plan**

For this section, you can take the recommendations and group them into “Ongoing Efforts”, “Phase I” and “Phase II” projects, if that is helpful in planning.

### **References**

Plans, studies, maps and resources used in developing your interpretive plan.