

Resource Management Guide Compartment 14 Tract 05

Pike State Forest
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Location: In part of the W ½ of Section 23 T2S R7W Pike County, IN. This tract lies about two miles east of Augusta, IN.

General Description: This tract is 95.9 acres. Reclaimed mine spoils make up approximately 25% of the tract on the NE corner of the tract. This area consists of herbaceous plants and groups of small trees peppered throughout the area. Many of these trees were planted during the reclamation efforts. Tree species present include Black Locust, Quaking Aspen, Cottonwood, and White Pine.

There is a lake on the tract that is about 3.5 acres. There are also wetland areas along the northern border of this tract. These wetland areas consist of open water and wetland vegetation. All of these water bodies were constructed during mine reclamation operations.

The Patoka Hills Quail Unlimited group has done some ecosystem restoration work in the mine spoils area. The intent of this is assumed to be to create suitable quail habitat as the majority of this area is covered with Chinese Lespedeza.

The remainder of the tract consists of closed canopy hardwood forest; much of which has been logged over the years. The dominant tree species in this area are White Oak, Black Oak, and Yellow Poplar.

History:

This land was purchased from James C. Ellis on September 27, 2007 in a large purchase. Due to the recent acquisition of this land, this inventory is the first action taken on it by the DNR DoF.

Coal mining was done in the northeastern corner of the tract. After the mining operations the land was reclaimed by leveling out the soil and planting plants well suited to such disturbed sites. Either through planting or succession there are exotic/invasive plants widespread in this area. This is further discussed later within this report.

There has been some further site rehabilitation by Patoka Hills Quail Unlimited in the reclaimed mine areas. The majority of this reclaimed mine area is infested with Chinese Lespedeza (*Lespedeza cuneata*), an exotic and invasive plant that used to be thought good habitat for quail but has since been dubbed unsuitable to sustain them. It appears that the Quail Unlimited Group has mowed strips in the Lespedeza and planted grasses in swaths over portions of this area. It is assumed that this has been done to create quail habitat.

Much of the wooded area on this tract was harvested sometime in the 1970's. Most of the merchantable timber was taken with the exception of a few pockets scattered over the compartment. This is evidenced by decomposing stumps still present on the tract. It is also possible that some of the smaller trees were harvested for firewood after the larger trees were cut. There are extensive, well-used four wheeler trails present in this area. These illegal trails are presumably used for hunting access as permanent hunting stands were also found on the tract. Along one of these trails there is an area where some tires have been dumped by the side of the trail. The tires appear to have been there for some time but they should be cleaned up during the next activity within this tract.

Landscape Context:

This tract lies close to compartment 12. Compartment 12 is directly to the north of this compartment. This tract doesn't share any boundaries with any other compartments besides 12.

The land that this tract is on was formally used for mining on the northeast corner and timber production on the rest of the tract. Now the area is used for quail habitat in the mine reclamation area and timber production in the forested portion.

Topography, Geology and Hydrology:

This tract is located in the watershed surrounding the Patoka River. The topography is rolling to moderately steep hills and a general sloping to the north into the open water present on the northern boundary of the tract. Some of the water that drains off of this tract is held within these retaining ponds.

There is a lake located on this tract. It is located, roughly, to the north of the center of the tract and is about 3 acres in size. There is one main drainage ditch that runs from the southeast corner of the tract to this lake. There are also several smaller drainages that run into this main drainage. There is a wetland area with open water along the eastern half of the northern border. Both of these were created during the reclamation process after coal mining.

The geology of this area consists of underlying shale and sandstone. As indicated by the history of mining, there are seams of coal in the north half of the tract.

Soils:

Note: When the Site Index for this tract was calculated, it was calculated without taking the areas of Fairpoint silt loam (FaB) or water into account. The reason that FaB was not included in the calculation is because there is no site index given for this soil because it is reclaimed mine spoils and it is so degraded that it has little potential for timber production.

Gilpin Silt Loam (GnE), 15-30% slopes- This is a strongly sloping to steep, moderately deep and well drained soil on side slopes in uplands. The subsoil is 29" thick and fractured sandstone bedrock occurs at 35 inches. The soil's available water capacity is low, permeability is moderate and surface runoff is rapid. Organic matter content in the

surface layer is moderate. Erosion is a major hazard. The soil's land capability is VIe, the woodland ordination symbol is 4R and the site index is 80.

Fairpoint silt loam (FaB), reclaimed – This a nearly level to strongly sloping, deep, well drained soil in surface-mined areas on uplands that have been shaped and smoothed. It formed in medium textured or moderately fine textured material over nonacid mine spoils. The mine spoil consists of partially weathered soil and rock material and fragments of shale, siltstone, sandstone, and coal. Available water capacity is low and permeability is moderately slow. The rooting depth is restricted in some areas due to compaction of the underlying mine spoil. The organic matter content is very low in the surface layer. The land capability classification is IVs. No woodland ordination symbol or site index is assigned.

Zanesville Silt Loam (ZaC3) 6-12% slopes, severely eroded- This soil is found on moderately sloping, deep and moderately well drained soils. The Available water capacity is moderate. Permeability is moderate above the fragipan and slow in the fragipan. Surface runoff is moderate in cultivated areas. There is a slowly permeable fragipan at a depth of about 2 feet. The perched seasonal high water table is above the fragipan during winter and early spring. Organic matter content is low. The land capability class is IVe, it has a woodland ordination symbol of 3D and a site index of 60.

Zanesville Silt Loam (ZaB), 2-6% slopes- This soil is found on gently sloping, deep, and moderately well drained soil on ridgetops in uplands. Sandstone bedrock is found at 78 inches. The soil has moderate available water capacity and permeability is moderate above the fragipan and slow in the fragipan. Surface runoff is medium. There is a firm and brittle fragipan at 24-32 inches and a perched seasonal high water table is in or above this fragipan during winter and early spring. Organic matter content is moderately low. Erosion is the major hazard for this soil. The soil has a land capability classification of IIe, a woodland ordination symbol of 4A and a site index of 68.

Belknap Silt Loam (Bg), frequently flooded- This soil is a nearly level, deep and somewhat poorly drained soil on flood plains. The soil is flooded for brief or long periods of time during the winter and spring. The soil has a very high available water capacity. Surface runoff is slow and a seasonal high water table at 1 to 3 feet in the winter and spring. Organic matter content is moderately low. This soil is well suited for trees. The land capability subclass is IIw, the woodland ordination symbol is 6A and the site index 90.

Access:

Take 700 E off of State Road 64. Follow 700E heading north and this road will come to a dead end in this tract (on the NE corner of the lake). The road is currently in need of some repair; it seems that all the rain recently coupled with local traffic has created many large potholes. Access to the interior of the tract is relatively easy as there are a number of four wheeler trails present throughout this area.

Boundary: The northern boundary of this tract is marked by a string of wetlands that include open water and swamps. The west side boundary is adjoined to tract 1408 for a small portion on the very far west side. The remainder of the boundary (heading straight east and then straight south) is bordered by private land. This boundary is not marked on the ground. The southern boundary follows a ridge top. The eastern boundary runs along a drainage ditch on the northern portion of it and then runs up a ridgeline on the southern portion of it.

Wildlife:

This site has a wide variety of habitats present so it has the potential to support a wide variety of critters. Animals (or evidence of animals) noted on this tract were white tail deer, blue jays, crows, ducks, and a multitude of songbirds. On the eastern half of the northern border there is open water surrounded by a wetland. It is likely that this water remains all year long. Additionally there is a three acre lake located on this tract. This provides habitat for many species of wildlife that require an aquatic habitat. Numerous frogs were seen and heard in this area. Minnows were noted in a small creek running from the lake.

The northeastern quarter of the tract consists of an open area of reclaimed mine spoils. Here the area consists of grass, Chinese lespedeza, and small trees sporadically present. Honey locust was planted in this area; mostly close to the forested areas. The bean pods of this tree are a favorite food of the white-tailed deer, squirrels, rabbits, opossums, and raccoons. Other trees present are Sycamore, White Pine, Staghorn Sumac, and Largetoothed Aspen. The trees in this area are sparse and small; averaging about 4" in diameter. This early successional area has the potential to support a variety of species that require this habitat; specifically, songbirds. Due to the degradation of the soil here, it would require no maintenance to maintain this area as a wildlife clearing if desired. Whitetail deer trails and bedding areas were also noted in this area. There is quite a bit of edge habitat where the mine spoils transition to forest. This edge habitat is especially favored by whitetail deer.

Within this area of reclaimed mine spoils, there has been some effort by Patoka Hills Quail Unlimited to provide habitat for quail. Much of this area is covered in Chinese Lespedeza. While this plant is somewhat desirable for quail habitat, it is an exotic invasive species that will outcompete native plants and grasses. The Quail Unlimited group has mowed strips in the Lespedeza and within these strips grasses and native plants are able to grow.

The rest of the tract consists of closed canopy forest. This area most likely supports wildlife that is typical of the area. Wildlife noted in this area are whitetail deer, box turtles, songbirds, squirrels, and toads.

A search of the Natural Heritage Database was dated 6/15/09. If any endangered, threatened, or rare species were noted, the plan of activities for this tract took those into consideration.

Current policy on managing for the federally endangered Indiana bat requires a certain component of snags and live trees of specific sizes and species. This tract meets the live tree requirements for the 11" size class. It does not meet the requirements for the 20"+ size class, though. The best way to achieve additional trees of this size is to allow pre-selected trees that are close to the size requirement the time needed to mature to this size. This tract meets the snag requirements for the 5" size class. It does not, however, meet the snag requirements for the 9" and 19"+ size classes. For the 9" size class 181 additional snags are needed and for the 19"+ size class 48 additional trees are needed. This is easily done by girdling trees that are appropriate to reach this goal.

Communities:

The dominate forest type on this tract is oak/hickory. Within this forest type White and Black oak are the dominate species present. The timber size/quality ranges from stands of med-large sawtimber/good quality to scrubby stands with low quality. There are some areas of almost pure yellow poplar present. These poplar stands are located on knobs and are relatively small. The forested area covers about 75% of the tract, excluding the mine reclamation area in the north and the lake.

There were some trees planted on the mine reclamation area; mainly black locust and cottonwood. Additionally, sycamore and staghorn sumac are present too. There are areas of early successional species along the edge where the open area meets the forest. Here there are black locust and staghorn sumac. There is a small amount of white oak present in this area as well. Additionally there are some sporadic groups of trees around the water in the riparian area around the open water along the far northern boundary of this tract. Small groups of cottonwood, sycamore and willow are present along the shore. All of the trees on the mine reclamation area are small and overall have an average diameter of around 4".

The far western portion of this tract along the low area has lower valued timber (as a result of the form and species of the trees) than the rest of the tract. This is partially because it lies in a somewhat low area and has some bottomland species present – specifically sycamore and elm.

In the northern portion of the tract there is a severe infestation of Chinese Lespedeza. It covers the reclaimed mine areas and is only broken by what seems to be mowed areas (that are now grassy) assumed to be done by the Patoka Hills Quail Unlimited rehabilitation efforts. Chinese lespedeza is primarily a threat to open areas such as meadows, prairies, open woodlands, wetland borders and fields. Once it gains a foothold, it can crowd out native plants and develop an extensive seed bank in the soil, ensuring its long residence at a site. Established dense stands of lespedeza suppress native flora and its high tannin content makes it unpalatable to native wildlife as well as livestock. It is still planted for quail food plots and soil stabilization, but it is unknown how it got onto this tract. It is assumed that it was planted during the rehabilitation efforts.

Common Reed Grass (*Phragmites*) is present in the wetland area on the northern boundary of this tract. It has overtaken much of the cattail swamps and is in the process

of taking over the remainder of the area. Now is the perfect time to resolve this problem before all of the native plants are displaced.

Japanese honeysuckle (*Lonicera japonica*) is present throughout much of this tract; however, it is not a pressing issue right now. It is present in low enough numbers that it is not a threat to the tree regeneration of the tract. Additionally, when the mine spoils area is treated for other exotics the honeysuckle will (hopefully) be eradicated as well.

Black locust (*Robinia pseudoacacia*) is present along the edge of the forest on the south side of the mine reclamation area. It extends north to the road that is heading east/west on this tract. The black locust was most likely planted during reclamation efforts but it can be an invasive species. It does benefit the soil as it is a nitrogen fixer. It would benefit this area to leave the current black locust in place to continue to rehabilitate the soil but to monitor the area to ensure it does not spread into the forest and outcompete the more desirable species.

Grape vines are present thorough almost the entire wooded area of this tract. The number of vines varies from very few to a moderate amount.

Recreation:

There is much evidence of hunting on this tract. This evidence consists of a number of four wheeler trails, permanent deer stands, and shotgun shells found on the ground. It is presumed that the easy access to this site creates an area of heightened hunting pressure on the local wildlife. Additionally, the area of rehabilitated quail habitat may sufficiently support a high enough quail population to sustain hunting.

Additional recreation opportunities on this land are fishing, birdwatching, hiking, ATV riding (illegally), and non-timber forest product harvesting.

Cultural:

Cultural resources are to be protected on State Forests. If any resources were noted on this tract the plan of activities took them into consideration.

Tract Subdivision Description and Silvicultural Prescription:

The forested portion of the tract is comprised mainly of Oak/Hickory cover type. Scattered among the Oak/Hickory are some pockets of almost pure Yellow Poplar. Because of their small size and for simplicity sake, these pockets of Poplar will be included with the management guidelines of the Oak/Hickory. In addition to these pockets, Yellow Poplar is present over much of this tract.

The majority of timber on this tract is of average value. There are some pockets of timber present though that was missed during the logging in the 1970's and these pockets consist of higher value timber. Especially as the dominate species present within the majority of these pockets is White Oak.

The overall form of the timber on this tract is good. The closed canopy forest portion of the tract is fully stocked at 85%. This is halfway between the A and B lines on the

Gingrich Table. There is a fair amount of oak regeneration on this tract. These young oak trees are anywhere from seedling to sapling sized. The site could do with a light harvest. By cutting about 77,800 bd. ft. it will keep the stand fully stocked for the closed canopy forest portion for the tract at about 68%. This is close to the B line on the Gingrich Table. The area of harvest will be about 58 acres. Grape vines are not currently a problem on this tract but a grape vine TSI should take place before a harvest in order to keep them in check.

The rest of the tract is reclaimed mine land. Here exotic/invasive plant control should be done on the Common Reed Grass and Chinese Lespedeza. The abundance of these plants is having an effect on the native species of plants that is in the area. It may take a few years of treatments to get this infestation under control. There are some areas where trees have been planted within this portion of the tract. The majority of these are black locust trees. These should be monitored for their weediness to ensure they do not take over the area and outcompete the natural oak regeneration that is present in this area.

Summary Tract Silvicultural Prescription and Proposed Activities:

2010 -- Remove Permanent Deer Stands

2010 -- Remove Dumped Tires

2010 -- Treat Chinese Lespedeza and Common Reed Grass with herbicide

2011 -- Evaluate the effectiveness of the invasive treatment done in 2010. Treat again if necessary.

2011 -- Grape vine TSI

2011 -- Mark western boundary

2012 -- Timber harvest of about 77,800 Board Feet over about 58 acres

2013 -- Post harvest TSI

2022 -- Hardwood/oak regeneration evaluation of harvested area.

2029 – Inventory

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