

Indiana Department of Natural Resources
Division of Forestry
DRAFT
Resource Management Guide

Clark State Forest
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Compartment: 7

Tract: 5
Date 7/6/12

Acres Commercial Forest: 169.5
 Acres Noncommercial Forest: 65
 Acres permanent Openings:
 Acres Other:

Basal Area ≥ 14 inches DBH: 63
 Basal Area < 14 inches DBH: 34.3
 Basal Area Culls: 1.3
 Total Basal Area: 93.6

Acres Total: 234.5

Number Trees/Acre: 201

Average Site Index: 70.4

Stocking Level: 82% Fully stocked

Species	Harvest	Leave	Total
Black Walnut	0	2880	2880
Sweetgum	3130	0	3130
Blackgum	0	3270	3270
Hackberry	0	3870	3870
Shingle Oak	0	4680	4680
Chiquapin Oak	0	4850	4850
Black Cherry	0	7250	7250
Scarlet Oak	7060	4680	11740
Shagbark Hickory	0	12380	12380
Red Maple	2670	11560	14230
Sugar Maple	4190	11230	15420
White Ash	12320	4100	16420
American Sycamore	6772	13030	19810
Chestnut Oak	18690	3080	21770
Pignut Hickory	1460	51990	53450
Eastern White Pine	35940	12980	54480
Virginia Pine	12110	77810	89920
Northern Red Oak	54260	51610	105870
Black Oak	66660	50140	116800
Yellow Poplar	49170	89620	138790
White Oak	144580	424640	571880
Totals	419012	845650	1272890

Location

This tract is located in Clark County Indiana, T1N R7E Section Grant283.

General Description

This tract consists of oak-hickory, mixed hardwoods, and pine types. There are 234.5 total acres within this tract. The Clark State Forest Office and service buildings are located within this tract. The primitive campground is also located in the northwest corner of this parcel. Two lakes, Oak and Pine, as well as the Corrections Manager's house are also found in this tract.

History

The area around the main entrance was planted when the property became a state forest. This area was planted because it was the first state tree nursery, therefore we see many species that would otherwise not grow in southern Indiana. The pines were planted during the 1930s when the Civilian Conservation Corps were stationed at Clark State Forest. There are also two black walnut plantations, which were planted in the 1960s. This tract was last inventoried in 1982. At that time the basal area was only 55 square feet per acre and there was 2,401 board feet. It was marked and sold in 1990.

Landscape Context

The majority of the surrounding land is forested. This tract lies between Highway 31 and Interstate 65. There is a neighborhood to the south and private property just north of the office.

Topography, Geology, and Hydrology

For the most part, this tract has very little slope. There is a fairly broad ravine through the center of the tract. This is where Oak and Pine lakes can be found. There is also a small creek that forms the north-most boundary.

Soils

Deam silty clay loam. These are moderately deep, well drained soils found on hills. Bedrock in the lower part of the subsoil. Subsoil is about 36 inches thick. Underlying material is silty clay loam, silty clay, and parachannery silty clay. Low available water capacity. Depth to water table is more than 80 inches.

Slope: 20 to 55 percent

Site Index: 70-80

Woodland Suitability Group: 22

Growth Range Potential: 3o10 or 3r12

Management Concerns: Slope, Soil Rutting, Erosion, Available water capacity, Early spring wetness, Lack of moisture in mid and late summer.

Coolville silt loam. This soil is deep and moderately well drained. It is an upland soil found on summits and benches of hills. Bedrock in the lower part of the subsoil. Surface layer is only about 3 inches thick. Surface layer is about 8 inches thick. Subsoil is about 44 inches thick. Underlying material is silt loam, silty clay loam, silty clay, parachannery silty clay loam. Moderate available water capacity and permeability is moderate. Depth to water table is about 12 to 24 inches.

Slope: 6 to 12 percent

Site Index: 66(Red Oak)

Growth Range Potential: 301 (Upland Oaks)

Management concerns: Soil Rutting, Erosion, Available water capacity, Early spring wetness, Lack of moisture in mid and late summer.

Coolville-Rarden complex. This soil is deep to moderately deep and moderately well drained. These soils are found on hills. Bedrock in the lower part of the subsoil. Underlying material is silt loam, silty clay loam, silty clay, and parachannery silty clay loam. Low available water capacity. Permeability is slow. Depth to water table is about 12 to 24 inches. Surface layer is about 5 inches thick. Subsoil is between 45 and 60 inches thick.

Slope: 12 to 18 percent

Site Index: 66-71 (Upland Oaks)

Growth Range Potential: 301 (Upland Oaks)

Management Concerns: Soil Rutting, Erosion, Available water capacity, Early spring wetness, Lack of moisture in mid and late summer.

Pekin Silt Loam. Deep, nearly level and gently sloping, moderately well drained soils on terraces. Fragipan in the lower part of the subsoil. Surface layer is dark brown silt loam about 12 inches thick. Subsoil is about 37 inches thick. Underlying material is stratified silty clay loam, silt loam, loam, and sand. Moderate in content of organic matter available water capacity is moderate, and permeability is very slow. Runoff is slow to medium.

Slope: 0-6%

Site Index: 70-80 (Upland Oaks)

Growth range potential (Upland Oaks): 185-260 bd.ft./acre/year

Management Concerns: Erosion, available water capacity, early spring wetness, lack of moisture in mid and late summer.

Weddel silt loam. This soil is moderately well drained and is moderately deep or shallow. They are found on till plains, shoulder and side slopes as well as summits. Bedrock in the lower part of the subsoil. Surface layer is about 8 inches thick. Subsoil is about 70 inches thick. Underlying material is silt loam, silty clay loam, and parachannery silty clay. Available water capacity is moderate.

Slope: 2 to 6 percent

Site Index: 65-70 (Upland Oaks); 75 (Tuliptree)

Growth Range Potential: 301(Upland Oaks)

Management Concerns: Rutting, Erosion, available water capacity, early spring wetness, lack of moisture in mid and late summer.

Access

Access to this tract is very good. The Main Entrance Road and Service Lane dissect this tract.

Wildlife

There are many species of wildlife found throughout this tract. While inventorying, deer, squirrels, chipmunks, and many song birds were noticed.

Wildlife Habitat Feature Tract Summary

	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
Legacy Trees *					
<i>11"+ DBH</i>	2115		5833	3718	
<i>20"+ DBH</i>	705		1192	487	
Snags (all species)					
<i>5"+ DBH</i>	940	1645	2596	1656	951
<i>9"+ DBH</i>	705	1410	1436	731	26
<i>19"+ DBH</i>	117.5	235	178	61	-57
Cavity Trees (all species)					
<i>7"+ DBH</i>	940	1410	1144	204	-266
<i>11"+ DBH</i>	705	940	1144	439	204
<i>19"+ DBH</i>	117.5	235	492	375	257
* Species Include: AME, BIH, BLL, COT, GRA, REO, POO, REE, SHH, ZSH, SIM, SUM, WHA, WHO					

There appears to be an adequate number of wildlife features for this tract. There can be some minor improvements for the optimal conditions. The first improvement is that some of the larger trees can be girdled in the post harvest TSI. This will create more large snags to satisfy the optimal large snag count. The second modification is there could be more openings in the harvest to provide more release for the smaller poles so they can reach the 7+ category and start to provide habitat for cavity nesters.

Indiana Bat

Timber harvest activities may have both positive and negative effects on the Indiana bat. While undetected but occupied roost trees could be cut during spring, summer or fall, the probability of disturbance or direct injury or death to bats is extremely small. Timber harvest could create conditions that are beneficial to Indiana bats. Roads and/or skid trails provide improved canopy foraging conditions by reducing clutter. Roosting habitat could also be improved by reducing clutter around roost trees. Edges of log landings and regeneration openings could provide roost trees with improved solar exposure, thus improving microclimate/thermal conditions for roosting areas. This would improve reproductive success and fitness, contributing to local population stability or increase. In cases of maternity trees this could provide conditions that increase growth and activity rates of young bats, leading to reduced time for parental care.

Natural Heritage Database review

A Natural Heritage Database review was obtained for this tract. If rare, threatened or endangered species were identified for this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

Recreation

This is a highly used area for recreation. The primitive campground is in the northwest corner of this tract. There are also many picnic shelters, the baseball diamond, and the basketball courts close to the main entrance. Also, oak and pine lakes are used by many for fishing, and the Resource Trail Head is located within this tract. Because of this tracts high use, this would be a great tract to make a demonstration forest, showcasing the different types of harvest methods and silviculture treatments the foresters use to manage woodlands.

Cultural

Cultural resources may be present on this tract but their location is protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

Summary Tract Silvicultural Prescription and Proposed Activities

Oak-Hickory

There are approximately 124 Acres within this type. There is a total of 113 square feet of basal area, giving about 41 square feet of basal area to be harvested. This stratum is 101% stocked which falls into the overstocked category. There is 92,700 total board feet. There is 33,200 board feet that is harvestable.

(70 leave ba, 41 harvest ba) 927 total mbf (Leave 582, remove332)

This type consists of small to large sized sawtimber. The main species are white and black oak. Many of the black oaks are dying and/or diseased and should be removed to give the pole-sized hickory and oaks room to grow. The white oaks, for the most part, seem to be healthy and in good condition. However, stocking levels indicate that the stratum is overstocked (101%) and some trees need to be removed. This area should be fairly easy to harvest. It is gentle terrain and easy access. This type surrounds Oak and Pine lakes as well as the property's houses and out-buildings. This will have to be considered when felling trees.

Regeneration is mostly sugar maple and white oak. There are a few scattered American beech, white ash, and hickory regenerating as well. This area needs an improvement harvest to remove the dead and dying trees. Black oak was the species noticed with the most mortality; however it was noticed in other species as well. It is believed that the trees are stressed from over-crowding and competition. Although there are abundant amounts of oak regeneration, openings should be created to give them a better chance at growth over the shade-tolerant species like maple, beech, and ash. The section of this tract between Service Lane and Main Entrance Road could be made into one large opening. This would allow plenty of sunlight to reach the forest floor, giving the sun-loving oaks a higher chance of survival over the shade tolerant species.

Another option is to just do a selective harvest with small regeneration openings. While this would remove some of the competition and the dying trees, it would not allow as much sunlight onto the forest floor. If no regeneration openings were made, you would have to do post-harvest TSI to remove the American beech and maples that would most likely out-compete the oaks.

For the oak-hickory stratum behind the office I would recommend just a selective harvest. This area contains mostly medium to large sawtimber. The main species is white oak.

Mixed Hardwood

There are approximately 40 Acres in this type. There is a total of 123 square feet of basal area. 49.5 square feet of basal area could be harvested. This is overstocked at 112%. There is a total of 24,400 total board feet and approximately 6,500 harvestable board feet

(72.5 leave ba, 49.5 harvest ba), 244 total bf (100 leave bf, 64.9 harvest bf)

These areas contain a mixture of yellow poplar, black cherry, oaks, and hickories, among others. This stratum is located mainly between Pine Lake and Service Lane. This area used to be old pine that has since been replaced by hardwoods. This area is over-stocked and in need of an improvement harvest. Most trees are small to medium sized sawtimber. A few of the poplars are 24+ inches in diameter. This section of the tract had quite a few pole-sized hickories as well. It should be thinned out to give them growing room. Single tree selection should be used to favor the hardwoods and remove what is left of the pine.

There is also an area north of the campground that follows a small drainage. This is bottomlands with wet-site species. This area will probably not be included in the harvest because of its proximity to the campground and Interstate 65.

Open Areas

There are approximately 44 acres in this type. There is a total of 65 square feet of basal area and 11,600 total board feet.

(leave 63.3 ba, harvest 1.7 ba), 116 total mbf (leave 114 mbf, harvest 2.12 mbf)

These areas include the field by the main entrance, the picnic areas, basketball courts, baseball diamond, the ponds, and the open field by the Service Lane entrance. While there are trees present in some of these places, they will not be harvested due to the high use these areas receive from visitors to the forest.

Plantations

There are only 3 acres of plantations throughout this tract, with a total of 93 square feet of basal area and about 524 total board feet.

(leave 61 ba, harvest 29.8 ba), 5.42 total mbf (leave 3.5 mbf, harvest 1.84 mbf)

In the southwest corner of this tract there are many plantations. These are mainly pines that were planted when the property was first designated as a State Forest. These pine plantations are described in the "pine" section below. There are also two black walnut plantations that were planted in the mid to late 70s. The black walnut trees are between 10 and 12 inches in diameter and should be left to grow. Although there is a rather high basal area in this area, the black walnut trees should not be included in any harvesting operations. These black walnuts can be included in the post harvest TSI. This will provide more room for the walnuts to grow and to be a successful plantation.

Pine

There are approximately 11 acres within this type. It has a total of 74 square feet of basal area and 357 total board feet.

(leave 44 ba, harvest 10 ba), 35.78 mbf (leave 24 mbf, harvest 7 mbf)

The pine that was planted in the early 1900s is starting to die and the trees are highly susceptible to windthrow. There are some small sawtimber sized black cherry that are established, but they are poorly formed and could be removed as well. The pine should be thinned out to make room for other hardwoods to take over. However, the understory is solid bush honeysuckle and autumn olive. A pre-harvest treatment of these invasive species should be completed before any trees are harvested to insure that they do not spread any further into the forest. If pre-harvest TSI is not feasible, the invasive species should be treated in post-harvest TSI. Part of this area was also the old state tree nursery. Therefore there are also other tree species that should be removed, such as the cork tree.

Activities Listing

2013-preharvest TSI, focused on spraying some of the exotics
2014- timber sale
2015- post harvest TSI (including the walnut plantation)
2016- re evaluate to see if the invasive control worked and spray again.
2017- evaluate to see if a 3rd treatment of the invasives is necessary.
2033- re inventory and evaluate for another possible harvest.

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