

Indiana Department of Natural Resources – Division of Forestry

Resource Management Guide - DRAFT

State Forest: Yellowwood

Tract Acreage: 20

Forester: James Dye

Management Cycle End Year: 2031

Compartment 06 Tract 01

Commercial Acreage: 20

Date: September 20, 2011

Management Cycle Length: 20 years

Location:

Compartment 6, Tract 1 lies in the North Half of Section 29 Township-9-N Range-2-E of Washington Township in Brown County, Indiana. The tract lies approximately 11.7 miles east of the city of Bloomington, Indiana.

General Description:

This tract is an approximately 20 acre managed, multiple-use parcel located in an area of 1913 acres grouped together as various tracts in Compartment 6. The timber type is predominantly closed canopy mixed hardwoods. Most of the land adjacent to this tract is also part of Yellowwood State Forest with only straight section of the south boundary being adjacent to privately held property. It is easily accessible via Dubois Ridge road. This area exhibits good opportunities for multiple use management, including timber management, wildlife management, and soil and water conservation. It is also ideal for public recreational activities such as hiking, gathering, hunting, and viewing.

Following on the next page is a table comprised from the 2011 forest inventory data and shows the relative frequency of tree species in this tract:

Figure 1 – Yellowwood, Compartment 6, Tract 1

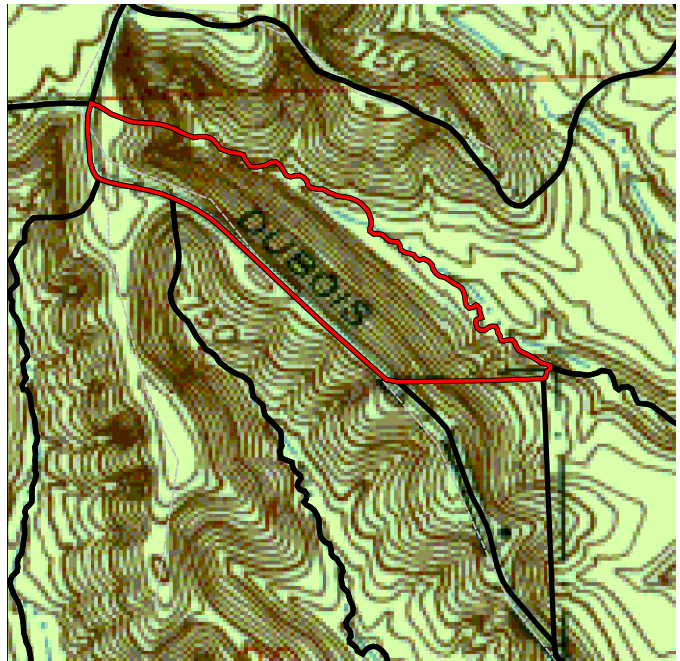


Table 1 – Basic Forest Structure

| Overstory | Understory | Regeneration |
|-------------------|-------------------|---------------------|
| yellow poplar | American beech | white ash |
| chestnut oak | sugar maple | red maple |
| white oak | dogwood | American beech |
| Northern red oak | red maple | hickory |
| white ash | blackgum | sassafras |
| largetooth aspen | Eastern red cedar | pawpaw |
| sugar maple | yellow poplar | chestnut oak |
| scarlet oak | bluebeech | red oak |
| black oak | hickory | black oak |
| bitternut hickory | ironwood | Eastern redbud |
| red maple | sassafras | |
| Eastern red cedar | | |
| black cherry | | |
| sassafras | | |
| American beech | | |
| shagbark hickory | | |
| black walnut | | |

History:

Yellowwood State Forest was created in 1940 when federal land was leased to the State of Indiana. The land was deeded to the state in 1956. Prior to that time, the Civilian Conservation Corps and Works Project Administration completed three lakes, a shelterhouse and a residence, all presently in use. Yellowwood Lake was completed in 1939. The 133-acre lake is about 30 feet deep.

Compartment 6, Tract 1 spans portions of two separate land acquisitions. Both of these were acquired from the federal government. The western two fifths (approximately) of the tract lie in a 20-acre parcel obtained on July 21, 1953. The remainder of the tract, the eastern three fifths, lies in a 40-acre parcel obtained on June 21, 1954.

It has been a number of years since any significant forest management activities have taken place. In 1972, a “quickie cruise” was conducted, indicating 122 square feet (sq. ft.) in basal area and 1819 board feet (bd. ft.) per acre and 1672 bd. ft. per acre of residual and harvest timber respectively. Later in the same year, two timber harvests were conducted. The first removed an estimated 40,500 bd. ft. from 215 trees, and the second was a small sale of select black walnut trees from this and a few neighboring tracts. In 1975, post harvest timber stand improvement

(TSI) was conducted. Since then, two reconnaissance efforts followed up on the progress of the tract.

Landscape Context:

Most of the tract is surrounded by closed canopy deciduous forests, also held within Yellowwood State Forest. The land adjacent to the straight section of the south edge of the tract is privately owned and consists mostly of closed canopy deciduous forest, but there is a dwelling and small yard along Dubois Ridge road. Several acres of pine forest (mostly Virginia pine) are present in other tracts adjacent to this one, particularly just to the east.

Topography, Geology, and Hydrology:

This tract consists of a wide, steep north northeast facing slope. A small amount of the ridge top along the west and southwest edge and the flat, bottomland area containing a mapped intermittent stream along the north edge are also a part of the tract. Near the southeast corner of the tract, a small but steep ravine containing an ephemeral drains into the mapped intermittent.

Soils:

The Berks-Trevlac-Wellston complex (BgF) is the most dominant soil type found in this tract, covering 16 acres of its 20 acres. This soil is shown in brown on the map below (figure 2). This soil is found on hills and slopes range from 20 to 70 percent.

The soils in the remaining 4 acres are Wellston-Berks-Trevlac complex (WaD), shown in orange in figure 2. These soils are found on hills also, but slopes here range from just 6 to 20 percent.

For more information about soils in this tract, consult table 2 on the following page.

Figure 2 – Brown County Soil Survey Map



Table 2 – Basic Soil Information for Compartment 6, Tract 1

| | | | | |
|------------|---------------------------------------|---|---------------------------------------|-----------------------------------|
| BgF | Berks-Trevlac-Wellston complex | | 20-70% slopes | Sandstone-shale-36" |
| | Site Index - 70 | Well drained, most areas in woodland, suited to trees Unsuitable for building sites and septic absorption fields | | |
| 16 Acres | Erosion <i>Moderate</i> | Equipment Limitations <i>Severe</i> | Seedling Mortality <i>Moderate</i> | Windthrow Hazard <i>Slight</i> |
| WaD | Wellston-Berks-Trevlac | | 6-20% slopes | Sandstone & shale-51" |
| | Site Index - 70 | Well drained, primarily used as woodland, well suited to trees Severe limitations to buildings, septic, and roads due to slope | | |
| 4 Acres | Erosion <i>Slight</i> | Equipment Limitations <i>Slight</i> | Seedling Mortality <i>Slight</i> | Windthrow Hazard <i>Slight</i> |

Access:

This tract is accessible via Dubois Ridge road. The surface is gravel, but appears to be in good condition. No existing skid trails are obvious, although there is an old roadbed which may have been used for skidding which enters the tract from Dubois Ridge road and proceeds north northwest, moving down slope in a diagonal fashion.

Boundary:

The straight portion of the south boundary is the only one adjacent to private land. This line has been recently repainted and is easily visible. The east, north, west, and the remaining portion of the south boundaries all follow existing roads or topographical features and border other state forest tracts.

Wildlife:

Wildlife resources in this tract seem abundant. This tract contains habitat for a variety of wildlife species. Habitat includes mostly mixed hardwoods, but there are a few small areas of oak-hickory. The oaks, hickories, walnut, and beech provide hard mast for deer, turkey and squirrel. Snags (standing dead trees) and cavity trees provide nesting, bugging, and roosting opportunities for woodpeckers, songbirds, and small mammals. Rotten logs, crater knolls, small ponds, and the mapped intermittent stream provide habitat for herptiles and aquatic vertebrates.

Species and sign noted during the 2011 inventory include Eastern gray squirrel, chipmunks, white-tailed deer, various songbirds, woodpeckers, crickets, and cicadas.

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.

Wildlife Habitat Features

According to the data collected during the tract inventory and represented in the following table (table 3), this tract is somewhat well represented with habitat in regards to the number, size and species of dead (snag) trees suitable for consideration of the Indiana bat (*Myotis sodalis*) and its suggested habitat requirements.

Snags, standing dead or dying trees, may be one of the most important wildlife habitat features in Indiana's forests as they are used by a wide range of species as essential habitat features for foraging activity, nest/den sites, decomposers (e.g., fungi and invertebrates), bird perching and bat roosting. Additionally, snags are an important contributor to the future pool of downed woody material. In terms of snags, only the larger size classes do fall below maintenance levels, while all size classes fall below of optimal levels. The actual number of snags present within the tract may be higher than the forest inventory determined. Due to the small size of the tract, and fewer sample plots, inventorying just one or two more actual snags may have been enough to indicate levels above maintenance in the deficient categories. Additionally, windthrow was frequently observed, and high winds in this tract may reduce the average time trees in decline or snags are left standing.

Forest wildlife species depend on live trees for shelter, escape cover, roosting and as a direct (e.g., mast, foliage) or indirect (e.g., foraging substrate) food resource. The retention of live trees with certain characteristics (legacy trees and cavity trees) is of particular concern to habitat specialists such as cavity nesters or Species of Greatest Conservation Need like the Indiana bat. Legacy trees of a particular species having certain characteristics suitable as live roost trees for the Indiana bat are very well represented in all size categories. Cavity trees meet and exceed both maintenance and optimum levels in all size classes.

Legacy trees, standing dead trees (snags) and cavity trees will be given consideration for retention as habitat for the Indiana bat and other wildlife as defined by the Resource Management Strategy for the Indiana bat on State Forest Property and the Management Guidelines for Compartment-level Wildlife Habitat Features. In addition, the girdling of select cull trees could be performed through post harvest timber stand improvement (TSI) to increase snag trees, particularly in the larger size classes.

Table 3 – Wildlife Habitat Summary

| Legacy Trees* | Maintenance Level | | Inventory | Available Above Maintenance | |
|----------------------|--------------------------|--|------------------|------------------------------------|--|
| 11" ⁺ DBH | 180 | | 277 | 97 | |
| 20" ⁺ DBH | 60 | | 122 | 62 | |

* Species include: AME, BIH, COT, GRA, REO, POO, REE, SHH, ZSH, SIM, SUM, WHA, and WHO

| Snags (All Species) | Maintenance Level | Optimal Level | Inventory | Available Above Maintenance | Available Above Optimal |
|----------------------------|--------------------------|----------------------|------------------|------------------------------------|--------------------------------|
| 5" ⁺ DBH | 80 | 140 | 117 | 37 | -23 |
| 9" ⁺ DBH | 60 | 120 | 42 | -18 | -78 |
| 19" ⁺ DBH | 10 | 20 | 5 | -5 | -15 |

| Cavity Trees (All Species) | Maintenance Level | Optimal Level | Inventory | Available Above Maintenance | Available Above Optimal |
|-----------------------------------|--------------------------|----------------------|------------------|------------------------------------|--------------------------------|
| 7" ⁺ DBH | 80 | 120 | 131 | 51 | 11 |
| 11" ⁺ DBH | 60 | 80 | 131 | 71 | 51 |
| 19" ⁺ DBH | 10 | 20 | 22 | 12 | 2 |

Communities:

Currently, there is a relatively low presence of exotic plant species within this tract. A few light patches of multiflora rose were observed, but multiflora rose is so widespread that it has naturalized to the area. One small patch of autumn-olive was also observed, however, near the western edge of the tract along Dubois Ridge road.

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:

The area is accessible via Dubois Ridge road, and a small parking area is located just off the road, north of the tract. Although no permanently established recreation areas are present in this

tract, there are still several recreational opportunities. Hunting is permitted on State Forest property and this area also offers opportunities for off-trail hiking, gathering, and viewing.

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.

Tract Prescription and Silvicultural Prescription:

This tract was not divided into subdivisions (non-stratified).

The timber type is predominantly closed canopy mixed hardwoods with a few small patches of oak-hickory. The over-story consists mostly of medium to large sawlog sized yellow poplar, chestnut oak, white oak, and Northern red oak trees, but yellow poplar is by far the dominant tree present. The overall quality of merchantable timber is fair to good with poorer trees generally being confined to narrow areas along Dubois Ridge road. The large sapling and pole-sized under-story consists mostly of sugar maple, American beech, dogwood, white ash, sassafras, blackgum, and red maple trees. Seedling regeneration consists mostly of white ash, red maple, American beech, hickory, sassafras, and pawpaw.

The current stocking level of 116% indicates the tract has reached a significantly overstocked condition. The biggest damaging agent is windthrow, commonly observed throughout the tract.

The recommendation is to perform an intermediate harvest using the single tree selection method. This will result in thinning and a reduction of competition with and amongst the maturing quality sawtimber trees and preferred species. The composition of the tract will also be improved by harvesting low quality, damaged, diseased, dying and poorly formed trees as well as harvesting less desirable species such as maple, beech, sassafras, and aspen. A significant number of white ash trees are also present, and these should be harvested before the Emerald ash borer can infest the area.

Management in the form of Timber Stand Improvement (TSI) should be performed to control grapevines, release preferred crop trees through the culling of low volume, poorly formed trees and less desirable species, and to encourage early successional (oak) regeneration through the creation of canopy gaps and a reduction in understory shade tolerant species (sugar maple and American beech).

Standing dead trees (snags) and cavity trees will be given consideration for retention as habitat for wildlife. Legacy trees as defined by the Resource Management Strategy for the Indiana bat will be given consideration for retention as habitat for the Indiana bat. In addition, the girdling of select cull trees should be performed through post harvest TSI to address the suggested guidelines of the Strategy for the Consideration of the Indiana bat (IDNR – Division of Forestry, Resource Management Strategy for the Indiana Bat on Indiana State Forests, April 2008).

In terms of exotics, autumn-olive should also be treated, using an appropriate method for the time of year.

Where present and appropriately laid out, existing skid trails will be reused. Care should be taken with any new skid trails to prevent excessive erosion and damage to water quality. These trails will connect with an old log yard in Tract 2. It is proposed that Tracts 1, 2, and 31 all receive silvicultural treatments in the form of a combined timber harvest and TSI, thus the sale layout (including skid trails, log yard(s), etc.) will adequately span all of these areas combined.

The overall goal of this prescription is to make an improvement cut which will reduce competition among the larger trees, provide resources for future crop trees through the removal of over-mature and declining trees, improve understory composition in favor of oak regeneration, and improve overall timber species composition while providing forest wildlife habitat.

Proposed Management Activities:

Proposed Period:

Exotic/Invasive Species Control

2012-2013

Timber Sale and Harvest

2012-2014

Timber Stand Improvement

2013-2015

Inventory and New Management Guide

2031

The following attachments are kept in the tract file:

Ecological Resource Review

Aerial photo map with noted special features

Aerial photo map with noted unique areas

Soil type tract map

Indiana Natural Heritage Database Map

TCruise reports

Table 4 – Inventory Summary

Total Number of Trees per Acre: 226

Average Tree Diameter: 8.3"

Average Site Index: 70

Stocking Level: 116%

| | Acres | | Sq. Ft. per Acre |
|-----------------------------|-------|-----------------------|------------------|
| Hardwood Commercial Forest: | 20 | Basal Area Sawtimber: | 104 |
| Pine Commercial Forest: | 0 | Basal Area Poles: | 21 |
| Noncommercial Forest: | 0 | Basal Area Culls: | 3 |
| Permanent Openings: | 0 | Sub-merchantable: | 8.2 |
| Other Use: | 0 | | |
| Total: | 20 | Total Basal Area: | 136.1 |

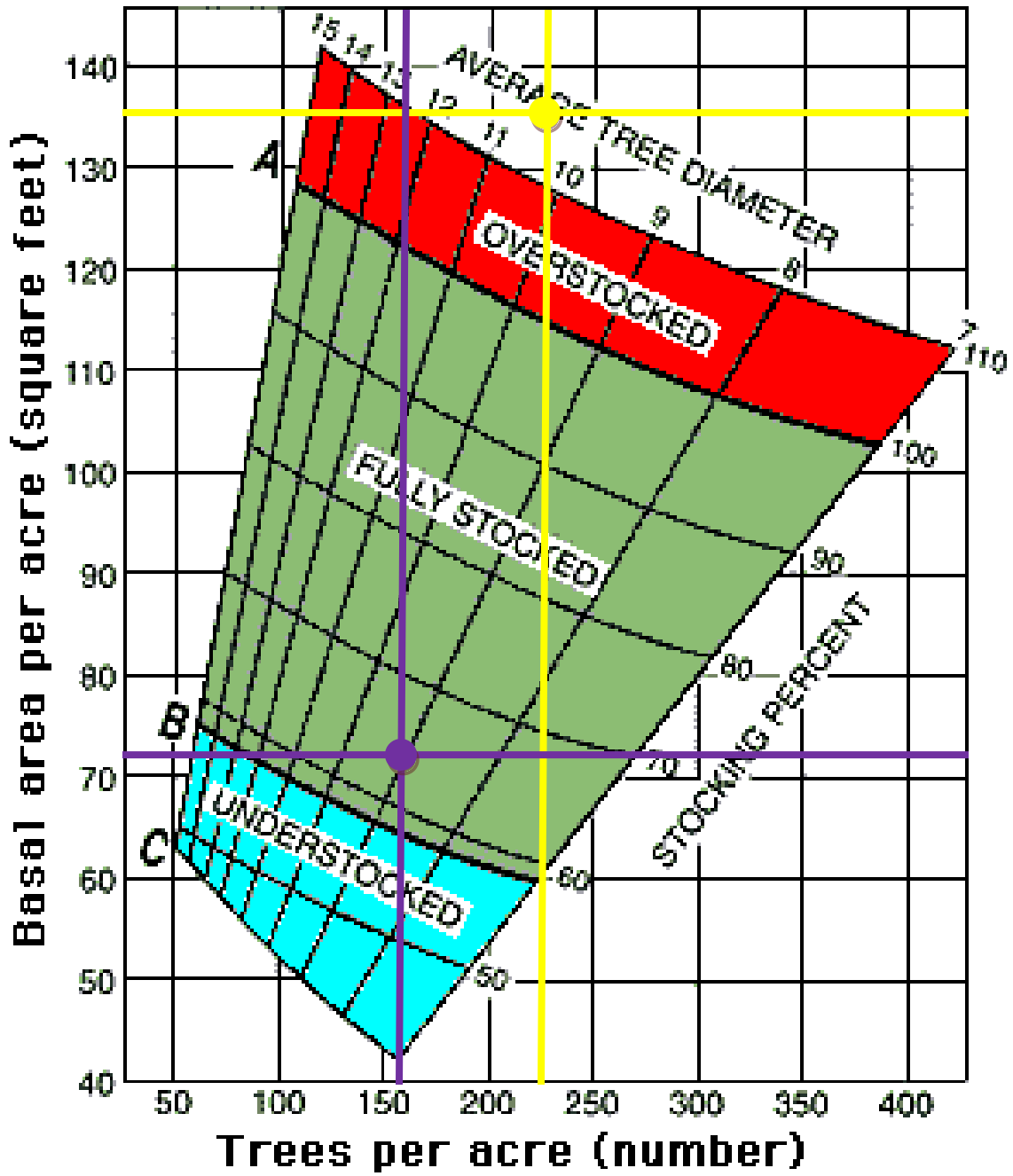
Table 5 – Estimated Tract Volumes (Commercial Forest Area), Doyle Rule

| Species | Harvest (bd. Ft.) | Leave (bd. ft.) | Total Volume (bd. ft.) |
|---------------|-------------------|-----------------|------------------------|
| yellow poplar | 61,270 | 41,040 | 102,310 |
| chestnut oak | 12,010 | 27,080 | 39,090 |

| | | | |
|-----------------------|----------------|----------------|----------------|
| white oak | 5,050 | 20,520 | 25,570 |
| Northern red oak | 0 | 24,220 | 24,220 |
| white ash | 9,230 | 0 | 9,230 |
| largetooth aspen | 8,750 | 0 | 8,750 |
| sugar maple | 1,970 | 4,620 | 6,590 |
| scarlet oak | 3,250 | 2,520 | 5,780 |
| black oak | 0 | 5,720 | 5,720 |
| bitternut hickory | 0 | 4,820 | 4820 |
| red maple | 1,730 | 2,000 | 3,730 |
| Eastern red cedar | 0 | 3,320 | 3,320 |
| black cherry | 0 | 2,990 | 2,990 |
| sassafras | 2,240 | 0 | 2,240 |
| American beech | 1,880 | 0 | 1,880 |
| shagbark hickory | 0 | 1,580 | 1,580 |
| black walnut | 0 | 1,390 | 1,390 |
| blackgum | 0 | 0 | 0 |
| Tract Total | 107,380 | 141,820 | 249,210 |
| Per Acre Total | 5369 | 7091 | 12461 |

Figure 3 – Gingrich Stocking Chart for 2011 Forest Inventory

Yellow lines indicate current values; Purple lines indicate projected values after timber harvest



To submit a comment on this document, click on the following link:

http://www.in.gov/surveytool/public/survey.php?name=dnr_forestry

You must indicate the State Forest Name, Compartment Number and Tract Number in the "Subject or file reference" line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered.

Note: Some graphics may distort due to compression.