Indiana Department of Natural Resources - Division of Forestry

Resource Management Guide

Harrison-Crawford State Forest **Compartment: 14 Tract: 3**
Dieter Rudolph **Date: September 14, 2010**

Acres Commercial Forest: 83
Acres Noncommercial Forest: 0
Acres Permanent Opening: 0
Acres Other: 0

Basal Area >= 14 inches DBH: 55.14 sqft/ac
Basal Area < 14 inches DBH: 40.38 sqft/ac
Basal Area Culls: 1.87 sqft/ac
Total Basal Area: 95.52 sqft/ac

Acres Total: 83

Number Trees/Acre: 190

Species	Harvest Volume(MBF)	Leave Volume(MBF)	Total Volume(MBF)
White Oak	51.23	160.65	211.88
Black Oak	16.66	35.96	52.62
Eastern Red Cedar	17.78	11.78	29.56
Sugar Maple	14.06	12.8	26.86
Yellow Poplar	13.09	13.76	26.85
Pignut Hickory	1.76	23.42	25.18
Northern Red Oak	15.33	8.29	23.62
Scarlet Oak	11.99	0	11.99
White Ash	9.21	0.99	10.2
Chinkapin Oak	1.94	5.91	7.85
Shagbark Hickory	0	7.3	7.3
American Beech	1.9	0	1.9
Blackgum	1.5	0	1.5
Red Maple	0	1.08	1.08
Post Oak	0	0.99	0.99
Total	156.45	282.93	439.38
Total per acre	1.9	3.4	5.3

Location

This 83 acre tract is located in Crawford County, Indiana. It is in section 21 T3S R2E.

General Description

This tract is located in the northern section of Harrison Crawford State Forest just south of Interstate 64. Scott Hill Road runs along the western boundary of the tract acting as the primary access point. This tract is comprised of a southeast facing slope in the northern two thirds and an east facing slope in the southern third. Sharpe Creek lies at the bottom of the southeast facing slope while a drainage to Sharpe Creek is at the bottom of the west facing slope. For the most part the slopes are not very steep with the exception being an area of slightly steeper slopes in the northeastern section of the tract.

This tract is made of mostly of an Oak-Hickory stand (74 acres) with a smaller Cedar stand (9 acres) along the southern portion of the county road. The Oak-Hickory stand had better quality

timber in the southern half of the tract. The trees in the northern portion of the tract had poor form, less merchantable height, and had most likely sustained fire damage in the past.

History

This tract was obtained in 1966 as portion of a parcel over a thousand acres for the Wyandotte Cave area.

The first managed harvest occurred in 1990, sold to DMI Furniture, Inc. Primary objectives of that harvest were intermediate improvement and sanitation, particularly in black and red oaks. Relatively small, harvesting covered about 44 acres or 55% of the tract area. The activity took place in the southwestern ½ of the tract. Approximately 848 bd.ft. per acre were removed at that time. The 4 top (volume) species removed during that operation were white, black, red, and scarlet oaks in that order. The post marking note indicated that the residual stand should be of high quality.

Landscape Context

1403 is located in the northern section of Harrison Crawford State Forest just south of Interstate 64. The northern and southern boundaries are shared with private property while the eastern and western are shared with neighboring tracts. Within a mile, the State Forest makes up most of the ownership. This area is largely forested. There are 3 other land use categories that share this mile radius. There are a couple areas of open ground (private) which contain single family residences with mostly pastures or other permanent grass cover. One of these open areas has recently been used for row crops (corn). I-64 and its corridor skirts within a mile of the tract. Lastly, much of the Tower Quarry (Mulzer) is located less than a mile from tract 3.

Topography, Geology, and Hydrology

This slope is comprised of a southeast facing slope in the northern two thirds of the tract and an east facing slope in the southern third. Total change in elevation within the tract is about 250 feet. Tract 3 lies within the Blue River watershed. The main waterway in this tract is Sharpe Creek which acts as the eastern border for the majority of the tract. The southern portion of the eastern border is a drainage which leads into Sharpe Creek, which empties directly into Blue River, around 6,200 feet to the southeast. Two large sinkholes were found within the tract which suggests some underground waterways are or were present at one time. Also, Sharpe Springs, an active spring feeding into Sharpe Creek, is located a couple of tracts to the south of this tract. Tract 3 is typical of the area, with a cap of sandstone at the higher elevations, underlain by limestone (~ ½ mile east of the limestone quarry mentioned previously).

Soils

Apalonia Silt Loam (AgrA. AgrB, AgrC2, AgrC3)

The Apalonia series consists of very deep, moderately well drained soils forms in loess and the underlying residuum from shale with limestone and siltstone. They are moderately deep or shallow to a fragipan. The surface horizon is a silt loam 8 inches thick. The first 8 inches of the subsoil is a silty clay loam. The next 33 inches is a silt loam. The next 11 inches is clay then it turns into a clay loam for 9 inches. The last 21 inches of the subsoil is a loam. The bedrock is weakly cemented shale with moderately and strongly cemented sandstone. The mean annual precipitation is about 43 inches and the mean annual temperature is about 54 degrees F.

Degree Slope: 0-12%
Woodland suitability group: 3d9
Site Index: 60
Growth Range potential: 258
Management Concerns: runoff and erosion

Corydon Stony Silt (CqyG)

The Corydon series consists of shallow, well drained soils that formed in as much as 8 inches of loess and in the underlying limestone residuum. The Corydon soils are on hills underlain with limestone. The surface horizon is 8 inches of a silt loam. The subsoil is 9 inches of clay. The bottom of the profile is unweathered bedrock. Mean annual precipitation is about 44 inches, and mean annual air temperature is about 54 degrees F.
Degree Slope: 20-60%
Woodland suitability group: 1o8
Site Index: 64
Growth Range potential: 258
Management Concerns: runoff and erosion

Tipsaw Very Fine Sandy Loam (TbIG)

The Tipsaw series consists of moderately deep, somewhat excessively drained soils. They formed in loamy residuum from sandstone with shale and siltstone. The surface is a dark grey very fine sandy loam about 2 inches thick. The subsurface horizon is also a very fine sandy loam about 3 inches thick. The subsoil is 15 inches is a fine sand loam and the last 20 inches is a loam. The bedrock consist of a weakly cemented and moderately cemented sandstone with shale, siltstone. The mean annual precipitation is about 43 inches, and mean annual temperature is about 54 degrees F. Permeability is moderate or moderately rapid
Degree Slope: 20-70%
Woodland Suitability: 3r12
Site Index: 70
Growth Range potential: 342
Management Concerns: runoff and erosion

Wellston Silt Loam (WhfC2, WhfD2, WhfD3)

The Wellston series consists of deep, or very deep, well drained soils formed in silty material from loess and from fine-grained sandstone or siltstone and with bedrock at depths of 40 to 72 inches. These soils have moderate permeability. The surface horizon is a silt loam which is 2 inches thick. The subsurface horizon is a silt loam about 8 inches thick. The first portion of the subsoil consists of 11 inches of a silt loam, the next portion consist of 4 inches of a silty clay loam. The last portion of the subsoil is one inch of a clay. The stratum is 9 inches of loam. The bedrock which is at 45 inches form the surface is an acid fine-grained sandstone. Mean annual precipitation is about 40 inches, and mean annual temperature is about 53 degrees F. Well drained. Runoff is medium to rapid.
Degree Slope: 0-50%
Woodland suitability group: 3o10
Site Index: 80
Growth Range potential: 342

Management Concerns: runoff and erosion

Access

The entire tract can be accessed by the county road which runs along the tracts western boundary. There are no trails leading into the tract, but as this tract is narrow, the access from the road is sufficient to cover the entire area.

Boundary

This tract has well established boundaries on all of its sides. The western boundary is defined by the county road which is still in use. The northern boundary has an old barbed wire fence along it as well as a metal pipe at the corner. The southern boundary also has fencing along it. The eastern boundary is made primarily of Sharpe Creek for the northern two thirds of the boundary while the lower third is a drainage leading to Sharpe Creek.

Wildlife

The Natural Heritage Database Review shows the presence of a troglobitic crayfish within a close proximity to this tract. This species was observed in BB Hole cave which resides in the southern end of 1404. This species was last observed in 1962 making it a species of less concern due to no recent spotting.

The goals set forth by the wildlife habitat feature were only partially met. There was a sufficient amount of legacy trees of both size classes present within the tract as well as snags of all size classes. No goals were met for cavity trees of any size classes within the tract; however, as the inventory was completed in the summer months, many cavities were likely obscured by leaf cover.

Wildlife Habitat Feature (Tract Wide)

Category	Maintenance level	Optimal Level	Inventory	Available Above maintenance	Available Above Optimal
Legacy Trees *					
11"+	747		2751	2004	
20"+	249		466	217	
Snags (all species)					
5"+	332	581	358	26	-223
9"+	249	498	284	35	-214
19"+	42	83	44	2	-39
Cavity Trees (all species)					
7"+	332	498	87	-245	-411
11"+	249	332	87	-162	-245
19"+	42	83	28	-14	-55

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

Indiana Bat

As management activities are currently performed in the winter months due to voluntary Indiana bat restrictions, it is even less likely that direct harm will come to the Indiana bat as they are

hibernating in nearby caves at this time. Any skid trails/haul roads created in this tract could improve the habitat for the Indiana bat by improving the canopy foraging conditions due to the reduction of understory clutter. Furthermore, the areas around likely roost trees can be opened up to benefit the bat. The edge of log yards can increase the solar exposure of roost trees which improves the microclimate and thermal conditions of the roosting areas.

Trees that are ideal for roosting bats such as large snags and large trees that have loose/exfoliating bark can be retained to provide for the Indiana bat. Furthermore, the growth of ideal tree species for the Indiana bat can be managed to promote growth to increase the recruitment of trees into the categories suitable for the Indiana bat.
At the moment this tract does not meet any of the optimal level goals and only half of the maintenance level goals. There is a deficit of cavity in all size classes. There was an excess of legacy trees present within the tract making it possible to actively manage the stand and create more snags out of the lower quality trees.

Recreation

The primary form of recreation within this tract would be hunting. The easy accessibility of the tract due to the county road along the western boundary enhances the areas appeal to hunters. Also, BB Hole exists in the neighboring tract near the eastern boundary making this tract the main mode of access to the cave. Illegal horseback riding use coming in from the county road, through the tract, has been noted and efforts should be made to discourage this activity.

Cultural

There were no cultural sites found within this tract during the inventory.

Summary Tract Silvicultural Description, Prescription, and Proposed Activities

This tract was last inventoried in January of 1990. Since then, the stand has increased its volume in board feet by over 115,811 board feet. This increase brought the volume from 324,469 board feet to 440,290 board feet. This increase shows an overall trend of 66.44 board feet per acre per growing season since the last inventory. Furthermore, a large area of the growth has been in oak and hickory species while there was a decrease in beech, elm, walnut and ash. A new introduction to the stand since the last inventory was the eastern red cedar component which was in a cedar stand taking up 9 acres near the road. The change in white oak was the most significant averaging at 3,192 board feet per acre per growing season.

<u>Oak-Hickory (74 acres)</u>

This stand took up the majority of the tract and contained most of the hardwood component. The overall volume within this stand was 5,341 bf/ac with over half being from white oak. The basal area for the stand amounted to 95 sqft/ac. However, there was a major discrepancy within the stand. The northern half was lower quality trees that had lower volume due to size, height, and poor form while the southern half was better in all of these categories. The northern half also had a lower stocking than the southern. There was also a large amount of greenbrier and other brush in the northern half of the stand while the southern portion had a more open forest floor making it more favorable to regeneration.

This stand would benefit from a harvest and timber stand improvement within it. The northern section has lower volumes so it will likely need to have more of a TSI project on it due to the lower value while the southern portion could undergo a harvest to thin the stand. Trees in the northern section which seem harvestable should also be included in the harvest where accessible. The TSI would remove the poor growing stock. The harvest in the southern portion would help the stand by lowering the basal area which in turn reduces competition in order to increase the previously recorded growth rates.

Cedar (9 acres)

This stand was almost completely cedar with the exception of some hardwood trees along the edge. The volume within the stand came out to be 4,950 bf/ac with 3,800 bf/ac being from cedar. This stand was fairly dense as a result of the smaller trees and brush in the understory as well as the high amount of cedar in the overstory. At the moment, the hardwoods are starting to move into this 9 acre stand as can be seen by the oaks and poplar along the edges of the stand. If allowed to progress naturally, it is likely that this stand will become a mixed hardwood stand in the future followed by an oak hickory stand in the farther future. If a thinning or clearcut were to go through the cedar component, the transgression to a hardwood stand would quickened significantly.

To submit a comment on this document, click on the following link:
http://www.in.gov/surveytool/public/survey.php?name=dnr_forestry

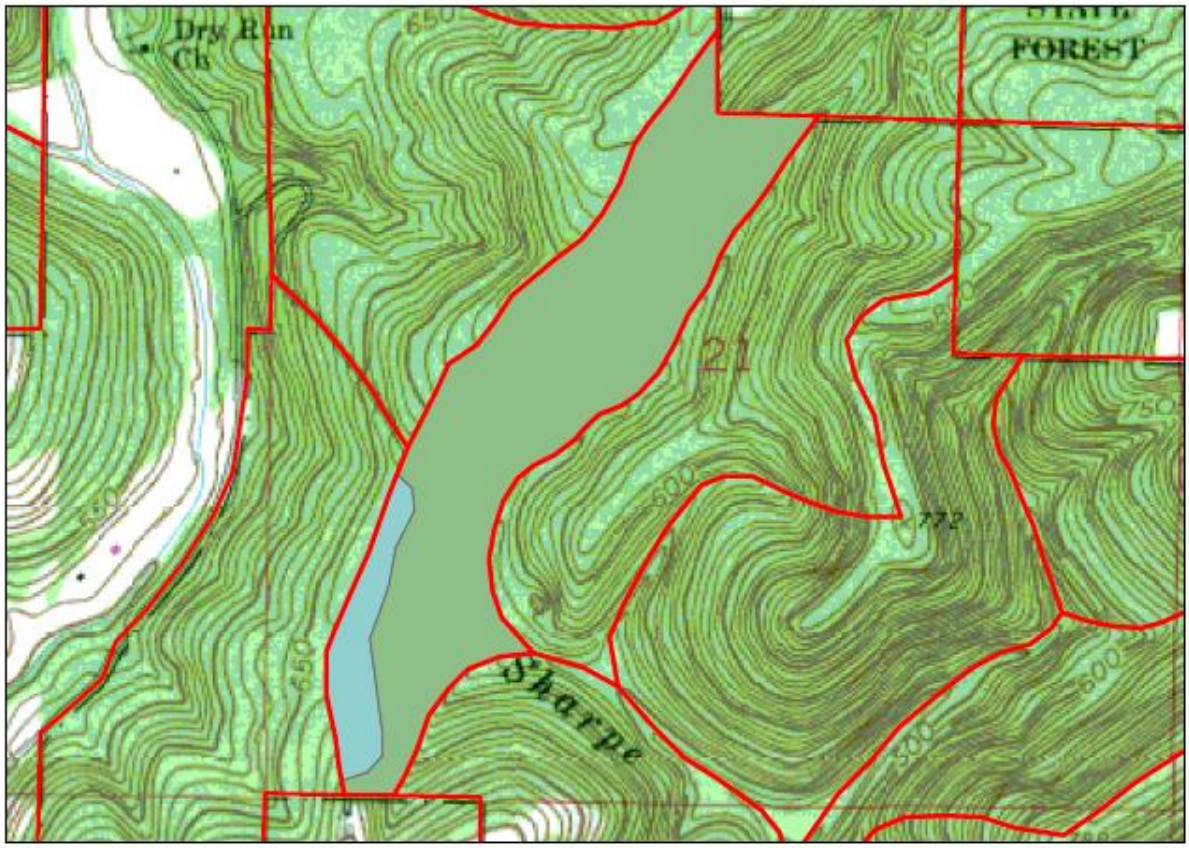
You **must** indicate the State Forest Name, Compartment Number and Tract Number in the "Subject or file reference" line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered.

TRACT ACCOMPLISHMENT RECORD

Compartment 14, Tract 3

DATE PLANNED	ACTIVITY / REMARKS	DATE COMPLETED
2011	Sign, obstruct passage of illegal horse trail	
2014	Mark timber harvest	
2016	Post harvest TSI	
2020	Evaluate cedar stand for possible conversion to hardwoods	
2025	Conduct inventory	
2035-40	Re-enter for next management cycle	

Harrison Crawford State Forest
Compartment 4 Tract 3
August 24, 2010



0 0.125 0.25 0.5 0.75 1 Miles

Legend

stands

Cedar

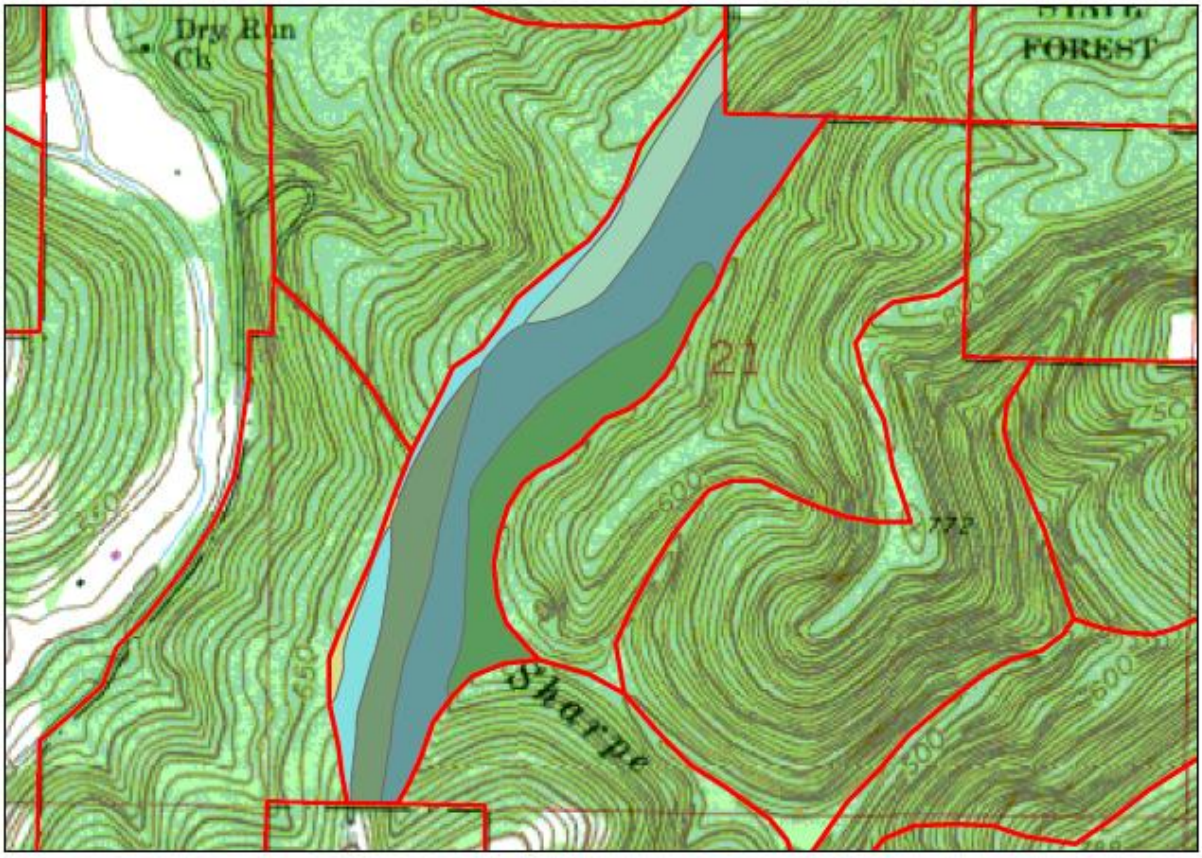
Oak-Hickory

N

W E

S

Harrison Crawford State Forest
Compartment 4 Tract 3
August 24, 2010



0 0.125 0.25 0.5 0.75 1 Miles

Legend

Soils

- AgrA
- AgrB
- AgrC2
- CqyG
- TblG
- WhfD2
- WhfD3

N
W E
S