Indiana Department of Natural Resources – Division of Forestry
Draft
Resource Management Guide

Harrison-Crawford State Forest **Compartment: 20 Tract: 07**
Dieter Rudolph **Date: August 28, 2009**
Edited and updated by Dwayne Sieg **February 20, 2014**

Acres Commercial Forest: 52
Acres Noncommercial Forest: 0
Acres Permanent Opening: 0
Acres Other: 0

Acres Total: 52

Basal Area >= 14 inches DBH: 57.18 sqft/ac
Basal Area < 14 inches DBH: 60.75 sqft/ac
Basal Area Culls: 6.41 sqft/ac
Total Basal Area: 117.93 sqft/ac

Number Trees/Acre: 294.52

	Harvest		Leave		Total	
Species	Volume (MBF/AC)	Volume(MBF)	Volume (MBF/AC)	Volume(MBF)	Volume (MBF/AC)	Volume(MBF)
E. Red Cedar	0.67	34.95	0.35	18.12	1.02	53.07
White Oak	0.42	21.70	1.96	102.06	2.38	123.76
Post Oak	0.36	18.94	0.17	8.66	0.53	27.6
Chinkapin Oak	0.13	6.85	0.19	10.01	0.32	16.86
Black Oak	0.12	6.20	0.16	8.21	0.28	14.41
Chestnut Oak	0.12	6.00	0.07	3.86	0.19	9.86
Scarlet Oak	0.1	5.17	0.11	5.96	0.21	11.13
White Ash	0.07	3.42	0.19	9.93	0.26	13.35
N. Red Oak	0.06	3.22	0.17	8.77	0.23	11.99
Sugar Maple	0.05	2.48	0.15	7.99	0.2	10.47
Shumard Oak	0.05	2.36	0	0	0.05	2.36
Pignut Hickory	0.04	2.18	0.3	15.44	0.34	17.62
Shagbark Hickory	0	0	0.07	3.53	0.07	3.53
Black Walnut	0	0	0.05	2.72	0.05	2.72
Bitternut Hickory	0	0	0.03	1.36	0.03	1.36
Blue Ash	0	0	0.01	0.54	0.01	0.54
Blackgum	0	0	0	0	0	0
Redbud	0	0	0	0	0	0
Red Maple	0	0	0	0	0	0
Yellow Poplar	0	0	0	0	0	0
Total	2.19	113.47	3.98	207.16	6.17	320.63

Location

This tract is located in Harrison County Indiana, T3S R2E in sections 35 and 36. Access can be gained via a fire lane that goes along the northern boundary coming off of SR 462. A horse trail travels along the eastern boundary on the ridge top. This horse trail is wide enough to be utilized by motor vehicles if the need arises.

General Description

This tract can be broken into 3 primary stands; Mixed Hardwoods (15 acres). The highest portion of the slope is an oak hickory covertype dominated by white oak with various oaks and hickory also present, which is labeled as Oak Hickory (28 acres). Halfway down the slope is a band of rocky terrain that had lower quality trees and was dominated by eastern red cedar, followed by white oak, labeled Rocky Slopes (9 acres). The Mixed Hardwoods stand can be found along the southwestern boundary while the Oak Hickory stand is along the northeastern boundary.

History

This land was obtained in two separate parcels. The area in the E ½ of the SE ¼ of section 35 and the small area in section 36 was a part of a 120 acres purchase in 1934. The rest of the area was part of a 140 acre purchase in 1940.

The tract file (dated 10-5-1979) contains a computer printout indicating 8 hours were spent marking thinning and weeding in this tract (TSI).

Landscape Context

Tract 2007 is a part of a contiguous body of land owned by the state of Indiana. It is completely surrounded by state land, all of which is forested. The forested surrounding is almost entirely a hardwood with a few patches of conifers nearby.

Topography, Geology, and Hydrology

Tract 2007 is a southwest facing slope between a ridge top and drainage. The aspect is the primary reason for the low productivity over much of this tract. Slope is moderate to steep, with an overall change in elevation of about 230 feet. Midway on the slope is a strip of rocky terrain, running the length of the tract. This strip had varying sizes of rock outcrops with the largest being near the center.

There was no evidence of karst features found within the tract. Most of the underlayment is sandstone, with limestone likely present towards the bottom (western corner) of the tract.

The drainage along the southwestern boundary leads into the Blue River, about .4 mile downstream.

A small wildlife pond was located near the southeastern boundary of this tract on the ridge top.

Soils

Corydon Stony Silt Loam (CoF) Shallow, moderately steep to very steep, well-drained, stony soils on uplands. Surface layer is about 3 inches. Subsurface is about 6 inches thick. Subsoil about 9 inches thick. The depth to hard limestone bedrock is about 18 inches. High in organic matter and low in natural fertility. Runoff is rapid or very rapid. Soil type is characterized by limestone outcrops, with as much as 15% on benches which are deeper than 20 inches to bedrock.
Degree Slope: 20-60 %
Woodland Suitability Group: 3d7
Site Index: 65-75 (Upland oaks)
Growth range potential (Upland oaks): 155-220
Management concerns: Runoff and erosion

Gilpin Silt Loam (GlD2, GlD3, GlE2, GpF) Moderately deep, strongly sloping to steep, well-drained soils. Surface layer is very dark grayish-brown silt loam about 3 inches thick. Subsurface layer is pale brown silt loam about 9 inches thick. Subsoil is about 17 inches thick. Depth to hard sandstone and shale bedrock is about 29 inches. Moderate in organic matter. Available water capacity is low and permeability is moderate. Runoff is rapid to very rapid.
Degree Slope: 12-30 %
Woodland Suitability Group: 3o10 or 3r12
Growth range potential (Upland oaks): 185-260 bd.ft./acre/year
Site Index: 70-80
Management Concerns: Runoff and erosion

Wellston Silt Loam (WeC2, WeC3, WeD2, WeD3) Moderately deep and deep, moderately sloping and strongly sloping, well draineds soils on uplands. Surface layer is about 9 inches thick and yellowish-brown. The subsoil is about 31 inches thick. Depth to hard sandstone bedrock is about 40 inches. Moderate in content of organic matter and low in natural fertility. Available water capacity is moderate or high, and permeability is moderate. Runoff ranges from medium to very rapid.
Degree Slope: 6-18 %
Woodland Suitability Group: 3o10
Site Index: 70-80 (Upland oaks)
Growth range potential (Upland oaks): 185-260 bd.ft./acre/year
Management Concerns: Runoff and erosion

Access

There is no direct public road access to 2007. A fire lane off of SR 462 passes the northern boundary of the tract and serves as the best means of access. A horse trail runs along the eastern boundary and is wide enough to be utilized by motor vehicles if the need arises.

Boundary

The northeastern boundary is defined by the ridge top while the southeastern boundary is the drainage. The western boundary is not defined by any natural land features and runs north south from the ridge top to the drainage.

Wildlife and Plant Species

A Natural Heritage Database review was completed for the tract. If Rare, Threatened or Endangered species (RTE's) 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.

The presence of cavity trees in the tract is at the maintenance level for all size classes. However, the tract does not meet the optimal level for cavity trees for the 7"+ and 11"+ size classes while it is met for the 19"+ size class. These cavity trees are utilized by animals as dens and roosts making their presence important in maintaining wildlife diversity within the tract.

Other wildlife species noted on this stand were those typical of the area. Evidence of deer, squirrels, chipmunks, raccoons, and turkey were seen in the area. The high presence of oak species creates a source for hard mast which is beneficial to multiple wildlife species.

Indiana Bat

Under current strategies for conservation of Indiana bat most management activities are performed in the winter months to minimize species impacts and avoid take. Resource management roads and trails 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.
The tract contains a surplus of live trees in the diameter classes between 11 and 20 inches in diameter and those greater than 20 inches in diameter. Likewise, there is an adequate amount of snags in both the maintenance and optimal level for the 5"+ and 9"+ size classes. Snags in the 19"+ size class are lower than target levels. Girdling trees to create snags would be an acceptable method to increase the amount of large snags.

Wildlife Habitat Feature (Tract Wide)

Category	Maintenance level	Optimal Level	Inventory	Available Above maintenance	Available Above Optimal
Legacy Trees *					
11"+	468		2385	1917	
20"+	156		270	114	
Snags (all species)					
5"+	208	364	933	725	569
9"+	156	312	543	387	231

19"+	26	52	19	-7	-33
Cavity Trees (all species)					
7"+	208	312	209	1	-103
11"+	156	208	175	19	-33
19"+	26	52	65	39	13

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

Recreation

This tract contains a horse trail and a section of the Adventure Hiking Trail. The horse trail showed signs of frequent use. This tract is near the split off of the Adventure Hiking Trail loop and acts as more popular entrance to the trail. Hunting is another important recreational use of the area in and around this tract. As this tract is widely used, any management that occurs should incorporate considerations of these recreational opportunities.

Cultural

Cultural resources may be present on the tract, but their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

Management Limitations

To minimize negative site impacts best management practices should be followed and buffers should be placed around any sensitive areas noted.
The Rocky Slopes stand acts as a management limitation. This tract has some areas where there are large outcrops impassible to equipment. To reach the Mixed Hardwoods stand trail routing with the least obtrusive rock crops should be used and need to be determined early in the management processes.

Summary Tract Silvicultural Description, Prescription, and Proposed Activities

Oak hickory (28 acres)
This stand is located in the northeastern section of the tract. The total basal area for this stand was 122.4 sqft/ac and a volume of 6,640 bf/ac. Of this 30.6 sqft/ac and 1,900 bf/ac were deemed as harvestable leaving 91.1 sqft/ac and 4,740 bf/ac. The dominant species within this stand was white oak and was followed by multiple oak and hickory species. The pignut hickories in the tract were displaying forest health problems. Many had a TSI or borer girdle around the tree which the tree attempted to heal by growing over the ring.

This stand would benefit from a small thinning that would focus on the removal of lower quality trees in order to decrease competition, especially in the 16"-19" size classes. The hickories should also be closely monitored and have any individuals with the previously mentioned health problem removed in order to reduce the spread of the problem and salvage the timber before mortality.

Rocky Slopes (9 acres)
This stand exists between the Oak Hickory stand and the Mixed Hardwoods stand. It is a narrow band running through the middle of the tract and has areas with large rock outcrops. The trees in this stand were mostly poor in quality and size being mainly eastern red cedar followed closely by white oak. The total basal area for the stand was 125.6 sqft/ac with a volume of 6,1500 bf/ac (one third of the total volume was eastern red cedar) The harvestable volume was 2,740 bf/ac, with a basal area of 40 sqft/ac, leaving 92.6 sqft/ac and 3,410 bf/ac.

This stand has lower timber potential than the other two stands due to the high amounts of large rocks close to or above the surface and thin soils. These traits limits the depth of the roots causing an increase in blowdown and a decrease in quality. Despite the lower potential, the stand should still be thinned with the other two stands to reduce competition in order to increase the quality and vigor of the trees as much as possible.

Mixed Hardwoods (15 acres)
This stand is located in the southwestern portion of the tract. The total basal area for the stand is 127.3 sqft/ac with a volume of 4,910 bf/ac. Of this, 35 sqft/ac and 2,370 bf/ac were deemed as harvestable leaving 92.3 sqft/ac and 2,540 bf/ac. The dominant species in this stand was eastern red cedar followed by a large variety of hardwood species including oaks, ashes, and maples. The trees in this stand were mostly of a medium diameter, falling within the 16"-19" size class.

The prescription for this stand is the same as for the Oak Hickory stand. The trees need to be thinned in order to reduce competition induced defects. Also, the pignut hickories in this stand were also showing the same signs of forest health problems. While there were fewer pignut hickories in this stand, it should still be treated.

Tract Prescription

This tract would benefit from a harvest/thinning following the guides mentioned in the individual stands. Overall, the tract has a high basal area (125.6 sqft/ac) which should be reduced to a basal area around 90 sqft/ac. This thinning would not focus on regeneration as much as improving the individuals present and should therefore be a small operation taking out around a third of the total volume. The tract should then be re-evaluated in 10 years at which time the medium sized diameter classes should reach harvestable sizes. The next harvest should focus more on the regeneration of the stand.

It may be advisable to combine a harvest in this tract with one in the adjacent tract(s). Preparation for such an activity would need to include road improvements. Another property forester has advised that the better access would come from the south along the existing fire trail. That fire trail is also used as a horse trail which use has damaged the surface. Local wetness issues and drainage should be improved at that time preparing for the harvest, which would improve the recreational use after the harvest and provide a much better BMP situation that currently exists.

COMPARTMENT 20, TRACT 7

PROPOSED ACTIVITIES	DATE
Fire trail improvements	2014-15
Timber harvest, in conjunction with C20, T5	2015
Post harvest TSI	2017
Re-enter for next management cycle	2025

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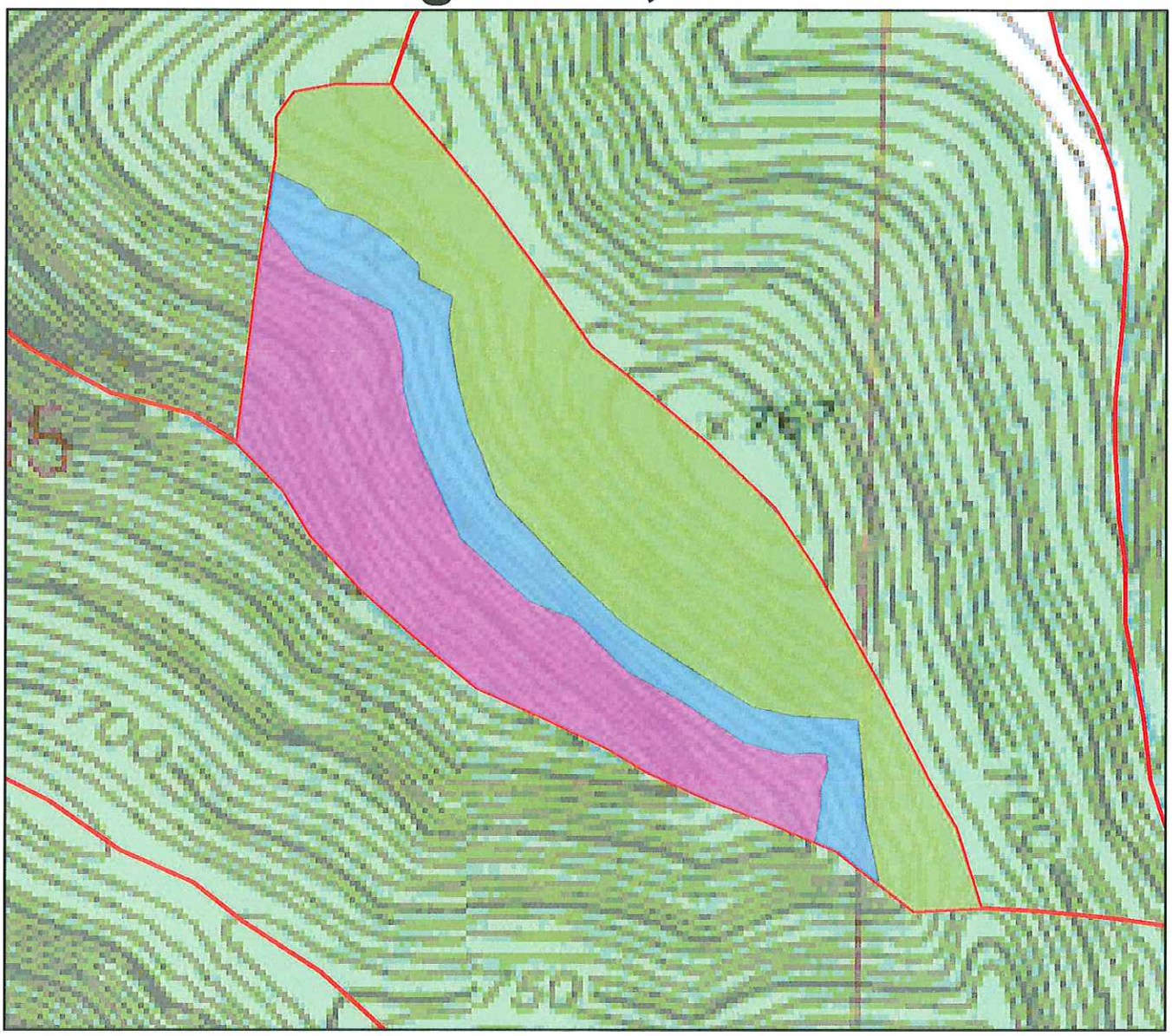
Harrison Crawford State Forest
Compartment 20 Tract 7
August 28, 2009



0.25 0.125 0 0.25 Miles

Legend

stands_2007

- Mixed Hardwoods
- Oak-Hickory
- Rocky