Indiana Department of Natural Resources - Division of Forestry

Resource Management Guide

Harrison-Crawford State Forest **Compartment: 10 Tract: 5**
Dieter Rudolph **Date: May 24, 2010**

Acres Commercial Forest: 152
Acres Noncommercial Forest: 0
Acres Permanent Opening: 0
Acres Other: 0

Basal Area >= 14 inches DBH: 50.40 sqft/ac
Basal Area < 14 inches DBH: 56.75 sqft/ac
Basal Area Culls: 5.00 sqft/ac
Total Basal Area: 107.40 sqft/ac

Acres Total: 152

Number Trees/Acre: 305

Species	Harvest Volume(MBF)	Leave Volume(MBF)	Total Volume(MBF)
Yellow Poplar	105.61	120.58	226.19
Eastern Red Cedar	95.89	6.51	102.4
Black Oak	62.62	83.85	146.47
Northern Red Oak	46.79	43.94	90.73
White Ash	22.35	6.25	28.6
White Oak	18.28	141	159.28
Sugar Maple	15.81	5.86	21.67
Pignut Hickory	10.82	13.78	24.6
Scarlet Oak	4.95	1.66	6.61
Virginia Pine	3.88	0	3.88
American Beech	2.61	0	2.61
Blackgum	1.66	0	1.66
American Elm	0	0	0
Black Cherry	0	1.39	1.39
Black Walnut	0	0	0
Chinkapin Oak	0	4.83	4.83
Dogwood	0	0	0
Mockernut Hickory	0	12.69	12.69
Persimmon	0	0	0
Redbud	0	0	0
Red Maple	0	4.23	4.23
Sassafras	0	0	0
Shagbark Hickory	0	17.12	17.12
Shingle Oak	0	0	0
Total	391.27	463.69	854.96
Total Volume per Acre	2.575	3.051	5.626

Location

This 152 acre tract is located in Crawford County, Indiana. It is in sections 16 and 21 T3S R2E.

General Description

This tract is located along Interstate 64, which acts as the northern boundary of the tract. The majority of the tract is a west facing slope with the northern horn being a north facing slope. The tracts slope runs down to Dry Run County Road on the western boundary. A drainage runs along the southern boundary of the tract.

Within the tract were four major stands. The largest stand was the Oak Hickory stand (67 acres) which was in the located in the higher portions of the slope in the center of the tract as well as a small portion in the eastern area of the horn. The major species in this stand were white and black oak, both having close to equal volume and basal area.

The Mixed Hardwoods stand (48 acres) was located in the lower slopes as well as within a couple of patches along the eastern boundary. This stand was mostly comprised of yellow poplar in the overstory with a large amount of sugar maple in the understory.

The Old Field stand (18 acres) was mainly located in the southwestern corner of the tract as well as a few small patches elsewhere. This stand was younger than the surrounding areas and had a higher amount of small trees. Eastern red cedar, yellow poplar, and white ash were the most dominant species within this stand.

The last stand was the Cedar stand (17 acres) which was located in two patches in the northern section of the tract. This stand was almost completely comprised of eastern red cedar with a smattering of other species in the understory.

History

This tract was obtained in three separate purchases. The southern third of the tract was obtained in 1940 from McCutcheart as part of a 105 acre purchase. The middle third was also obtained in 1940 from Mock as part of a 74 acre purchase. The northern horn of the tract was the most recent purchase, being in 1975 and being a part of a large scale acquisition from the Indiana State Highway Commission.

This stand was last inventoried in March of 1990 and was harvested in May of the same year. The focus of the last harvest was removing yellow poplar, white oak, and black oak all of which had similar volumes removed and over double the volume harvested from the 4th most prevalent species, northern red oak.

There was a grid of flagging throughout this tract. This flagging remains from a study performed by Purdue looking into the effects of the Interstate on the wildlife communities. This study has been completed making the flags serve no further purpose.

Landscape Context

1005 is part of a contiguous body of land owned by the State of Indiana. Private property neighbors this tract along the eastern boundaries. The neighboring private land is not forested and had houses on it. The northern boundary is defined by the Interstate 64 right of way. The state land immediately to the west and south are both forested as well as the land north of the interstate. Within 2 miles is a stone quarry (Mulzer) and a factory

(Jasper Engine). The rest of the nearby region is a mixture of forested and non-forested lands with single family residences dispersed throughout.

Topography, Geology, and Hydrology

The majority of the tract is a west facing slope which has its highest point on the private property to the east of the tract. The northern horn of the tract is a north facing slope which runs down to the interstate. A drainage along the southern boundary of the tact runs down into Dry Run.

There was no evidence of any karst features within this tract.

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

Haymond Silt Loam (HcgAH, Hm, Ho)

The Haymond series consists of very deep, well drained, soils that formed in silty alluvium. These soils are on flood plains and flood-plain steps. Slope ranges from 0 to 3 percent. Mean annual air temperature is about 55 degrees F, and mean annual precipitation is about 42 inches. The surface horizon is a brown silt loam plow layer that extends approximately 10 inches. The first subsurface horizon is a dark yellowish brown silt loam that extends to 25 inches. The second subsurface horizon is a yellowish brown silt loam that extends until 44 inches. The stratum is a massive yellowish brown fine sandy loam.

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

Udorthents Cut and Filled (Uaa)
The Udorthents are cut and filled soils, mainly used for roadbeds. The depth to water table or restricting layer is more than 80 inches. These soils have no frequency of flooding or ponding. The mean annual precipitation is between 40 and 46 inches. The mean annual temperature is between 52 and 57 degrees F.
Degree Slope: 0-90%

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

Dry Run county road runs along the western boundary of the tract. This road is mostly a dirt road with a small portion in the area of the tract being graveled. This road is in good condition with a few holes in it as well as being rather narrow. A paved county road runs along the southeastern boundary of the tract. The last harvest used a log yard off of the Scott Hill Road that borders the tract along a small length of its eastern boundary.

Boundary

The Dry Run County Road acts as the western boundary of this tract while the right of way fence for the interstate is the northern boundary. The southern boundary is defined by a drainage. The eastern boundary either Scott Hill Road or is shared with private property and is best defined by the fact that the majority of the private property is non forested.

Ca. 1990, The Division of Forestry conducted a licensed survey in Section 20, T3S, R2E that included the very SW tip of tract 5.

Wildlife

The Natural Heritage Database Review does not show any rare, threatened, or endangered species in this tract or in the surrounding areas. This tract did not meet most of the wildife habitat goals in reference to snags or cavities. There was an excess number of legacy trees of the desired species as well as a sufficient number of snags in the 5" to 9" size class. The cavity trees of size 19"+ just met the optimal goal. The other size classes for snags and cavities were below the maintenance level.

Wildlife Habitat Feature (Tract Wide)

Category	Maintenance level	Optimal Level	Inventory	Available Above maintenance	Available Above Optimal
Legacy Trees *					
11"+	1368		2823	1455	
20"+	456		610	154	
Snags (all species)					
5"+	608	1064	1673	1065	609
9"+	456	912	304	-152	-608
19"+	76	152	65	-11	-87
Cavity Trees (all species)					
7"+	608	912	413	-195	-499
11"+	456	608	340	-116	-268
19"+	76	152	155	79	3

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

Indiana Bat

As management activities can only be performed in the winter months due to Indiana bat regulations, it is unlikely 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 this moment the tract only meets a fraction of the goals associated with the Indiana bat. If any active management occurs in this tract, maintaining the current number of cavity trees will be one of the goals as well as producing snags from the larger, non desirable trees.

Recreation

The only form of recreation within this tract would be hunting. There are no trails and it is removed from the main area of recreation in the state forest. Their was evidence of ATVs using Dry Run County Road as well as the power line right of way, but there was no evidence of their use anywhere other than these tract boundaries.

Cultural

There are no known cultural sites within this tract.

Summary Tract Silvicultural Description, Prescription, and Proposed Activities

This tract was inventoried and harvested in 1990. The past inventory and harvest did not go into the horn for access reasons. Based on the past data, this tract has increased its volume at a rate of 95 bf/ac/year with a third of this growth being from eastern red cedar. The large amount of growth from cedar could be because of a portion of the stand that is in the horn which was not measured. Yellow poplar also had a large growth between the last two inventories.

Mixed Hardwoods (48 acres)

This stand was made up of five pockets scattered throughout the tract. The dominant tree in this stand was yellow poplar with a high amount of sugar maple in the understory. The overall volume for the stand was 7,400 bf/ac, half of which was yellow poplar. The basal area for the stand was 115 sqft/ac. If a harvest occurred in this stand, it would focus on removing the less desirable trees and reducing competition throughout the stand. The harvest would remove roughly 40 sqft/ac and 3,410 bf/ac leaving 75 sqft/ac and 4,000 bf/ac. By removing this amount, the stand returns to a lower basal area in order to reduce the competition of the stand and to increase the growth rates of the residual trees.

Oak Hickory (67 acres)

This was the largest stand of the tract and was located along the middle and upper slopes of the tract. The dominant trees in this stand were white and black oak followed by northern red oak. The black oak looked to be in good health although some appeared to be reaching their peak volume production before becoming over mature. There was 112 sqft/ac and 7,800 bf/ac. Of that volume, 2,150 bf/ac and 40 sqft/ac was deemed harvestable leaving 3,650 bf/ac and 75 sqft/ac. The majority of the harvested volume was from the black oak that appeared to be slowing down in productivity. The rest of the harvest aimed to reduce competition by removing the least desirable individuals.

The portion of this stand in the eastern end of the northern horn could be excluded from the harvest. This area is not easily accessible due to a creek that crosses the horn at the point where the stands change from mixed hardwoods to oak hickory. The area was small and not very dense making it not as necessary to manage.

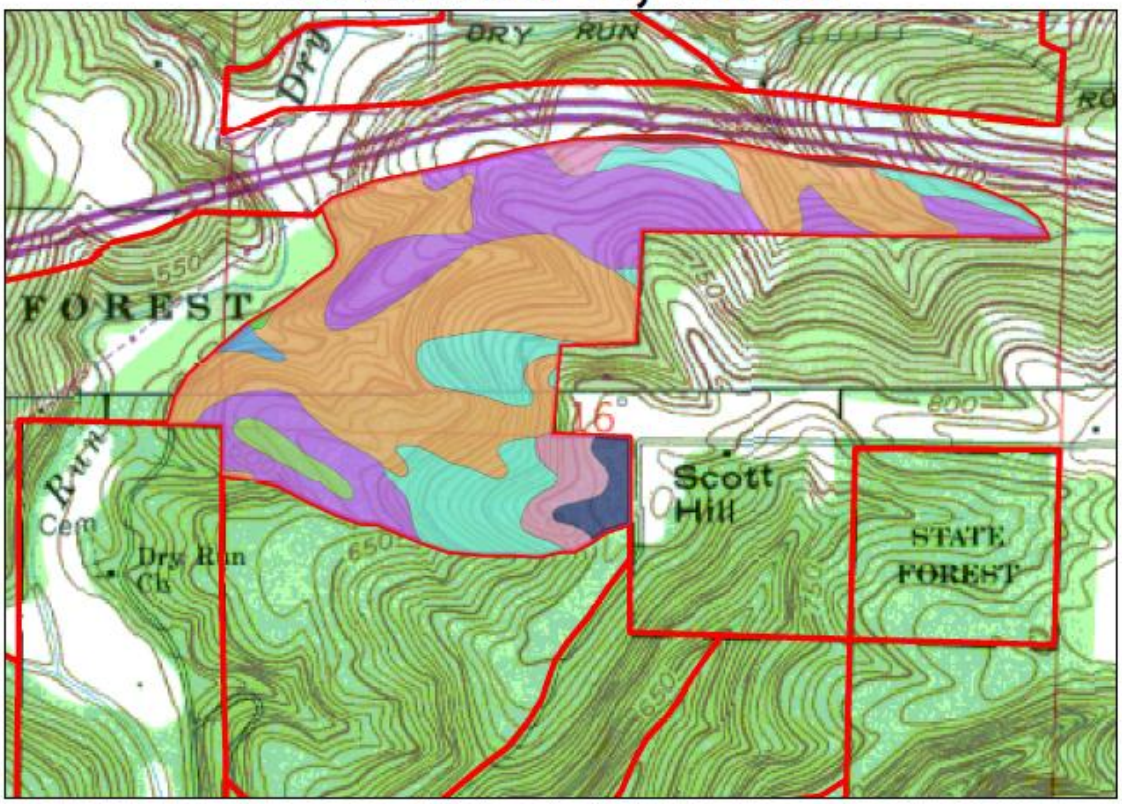
Old Field (18 acres)
The largest portion of this stand was found in the southwest corner of the tract. Eastern red cedar and yellow poplar were the most prominent species in the stand, both appearing to be younger in age. Over half of the stand's volume came from these two species followed by white ash. This stand has a high basal area around 110 sqft/ac and a volume of 5,700 bf/ac. The stand would benefit from a harvest or TSI. A TSI would focus on removing the eastern red cedar component of this stand to allow for the release of the understory hardwoods into the overstory. If the stand were harvested, the cedar would be removed as well as the ash along with a thinning of the yellow poplar present. The overall goal of either of these prescriptions would be to turn this stand into a mixed hardwoods or oak hickory stand.

Cedar (17 acres)
This stand was located in the northern horn of the tract. The stand was completely cedar in the overstory with some hardwoods in the understory. This area is a potential area for an opening. If left alone, the stand will remain stagnant. An opening would create the opportunity for hardwoods to move into this stand. The stand would likely be repopulated by yellow poplar at first and could eventually move into an oak hickory covertype like the surrounding area.

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.

Harrison Crawford State Forest
Compartment 10 Tract 5
October 6, 2010



0 0.15 0.3 0.6 0.9 1.2 Miles

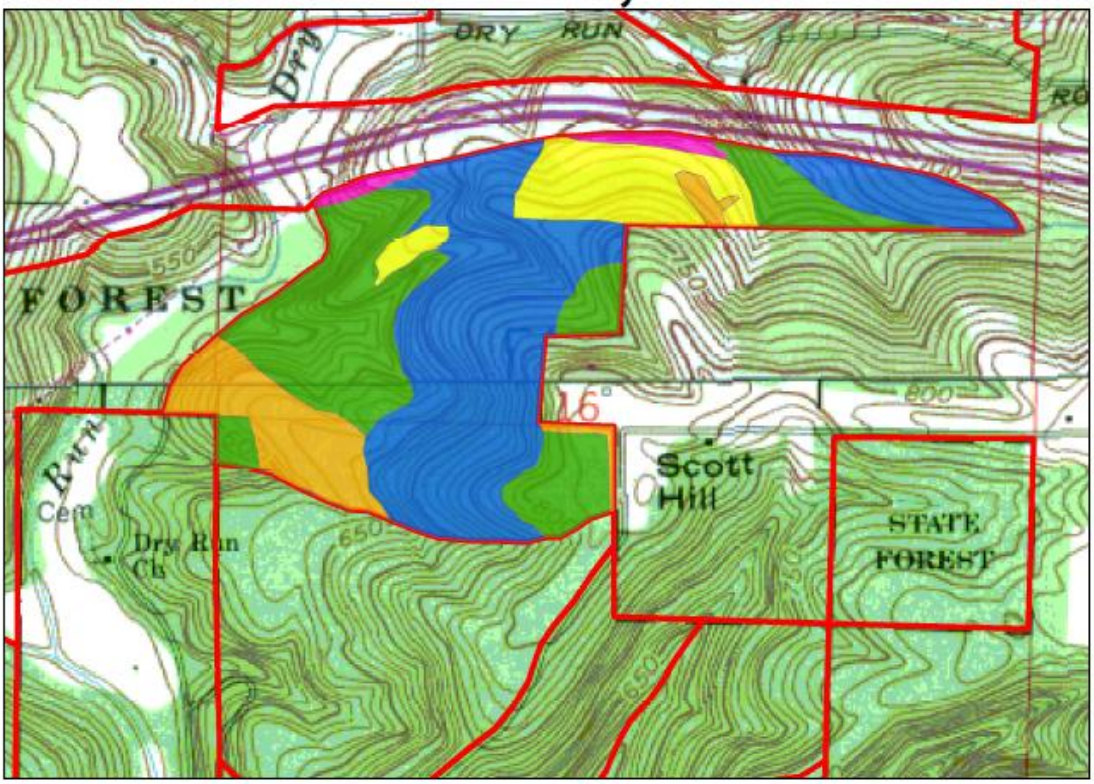
Legend

Soils_1005

- AgrB
- AgrC3
- HcgAH
- TblG
- Uaa
- WhfC2
- WhfC3
- WhfD2
- WhfD3

N
W E
S

Harrison Crawford State Forest
Compartment 10 Tract 5
October 6, 2010



0 0.15 0.3 0.6 0.9 1.2 Miles

Legend

stands

- Cedar
- Mixed Hardwoods
- Oak Hickory
- Old Field
- Open

N W E S