Indiana Department of Natural Resources
Division of Forestry

Draft

Resource Management Guide

Harrison-Crawford State Forest **Compartment:23 Tract: 13**
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Acres Commercial Forest: 127
Acres Noncommercial Forest: 0
Acres Permanent Opening: 0
Acres Other: 0

Acres Total: 127

Basal Area >= 14 inches DBH: 68.25 sqft/ac
Basal Area < 14 inches DBH: 69.53 sqft/ac
Basal Area Culls: 4.98 sqft/ac
Total Basal Area: 137.22 sqft/ac

Number Trees/Acre: 284

Species	Harvest Volume(MBF)	Leave Volume(MBF)	Total Volume(MBF)
Eastern Red Cedar	464.56	68.88	533.44
Yellow Poplar	141	209.01	350.01
Black Oak	37.85	47.81	85.66
Northern Red Oak	35.82	47.45	83.27
White Oak	27.92	29.38	57.3
American Sycamore	18.25	42.17	60.42
American Beech	16.49	10.59	27.08
Shumard Oak	3.56	5.4	8.96
Sugar Maple	3.41	3.8	7.21
Sassafras	2.91	0	2.91
Chinkapin Oak	2.58	12.68	15.26
Black Cherry	0	10.66	10.66
Scarlet Oak	0	5.37	5.37
White Ash	0	5.08	5.08
Black Walnut	0	4.75	4.75
Mockernut Hickory	0	4.7	4.7
American Elm	0	1.35	1.35
Blue Ash	0	1.03	1.03
Shagbark Hickory	0	1.03	1.03
Total	754.35	511.14	1265.49
Total per acre	5.94	4.02	9.96

Location

This 127 acre tract is located in Harrison County, Indiana. It is in section 18 T4S R3E. The tract is surrounded on three sides by a horseshoe bend of Indian Creek.

General Description

This tract is surrounded on three sides by Indian Creek. The outer area of the tract is low elevation and relatively flat. This flat area is mainly a Mixed Hardwoods stand, while

there are also a couple pockets of mixed hardwoods totaling 42 acres. The primary tree species of this stand is yellow poplar. The center of the tract is higher elevation with a gradual slope, except for the northern boundary along the Indian Creek which is steep with cliffs. The center of the tract is a combination of a Cedar stand (50 acres) and an Oak Hickory stand. The Oak Hickory stand is also found in the northern area (including the steep area) and as a pocket along the Indian Creek in the southeastern portion of the tract totaling 33 acres.

History

This main area of this tract was purchased in 1934 from McAdams. The boundary for this purchase is Indian Creek on three sides and the western boundary is shown on most topographical maps near the center line between the east and west halves of section 18. The new purchase is a small area west of the boundary line described above and was purchased from Doolittle in 2006. The tract boundary was adjusted subsequent to the Doolittle acquisition to follow identifiable land features and, thus differs from maps drawn previously.

The majority of the early purchase had been open farm ground at one time, hence the abundance of e. red cedar. The more recent purchase is known to have had unmanaged limited harvests of yellow poplar and, later, e.red cedar in the 1990s while in Doolittle ownership. The Doolittle parcel had been in the Classified Forest program for many years.

The area of the tract that was purchased in 1934 has no volume records on file. In 1973 the area was evaluated with a management prescription to remove mature and over mature timber where possible, perform a TSI to remove culls, vines, and undesirable species, and to convert the cedar area to hardwoods when possible.

Landscape Context

2313 is part of a contiguous body of land owned by the State of Indiana and borders both state and private land. The majority of the land on the other side of the creek is private property. The northwestern boundary also borders public property. The slopes in the tract to the northwest have areas of steep slope and cliffs. The private property to the northeast of the tract across the Indian Creek is a large grassy field. The landscape within a half mile east of this tract is mostly a mixture of forest and field, with several single family residences.

Topography, Geology, and Hydrology

This tract is mainly a gradual slope leading to flatlands bordering the Indian Creek. There is one area of the tract as well as an area of the neighboring tract that are steep slopes and cliffs. Change in elevation within the tract is about 170 feet (a high of 600ft to the lowest level of 430ft above sea level). All of this area drains into the Indian Creek which then runs eventually into the Ohio River.

No evidence of karst activity was found within this tract.

Soils

Baxter Cherty Silt Loam (BeC2, BeD2, BeE2, BeF2, Cbsd3)

The Baxter series consists mainly of deep well drained soils on uplands. These soils formed in loess, as much as 20inches and the underlying material is weathered bedrock. The surface horizon is 2 inches thick of a dark brown silt loam. The subsurface is 6 inches of a yellowish brown silt loam. The subsoil is 70inches of which the first 5 is a yellowish brown friable silty clay loam. The last 65inches is red firm to very firm cherty silty clay loam. The lower part has mottling and id 20-40 percent chert fragments. The available water capacity is high and the permeability is moderate.
Degree Slope: 0-35%
Site Index: 75
Growth Range Potential: 222
Management Considerations: runoff and erosion

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

Haymond Silt Loam (Hm) Deep, nearly level, well-drained soils on bottom lands and in basins of sinkholes in uplands. Surface layer is dark-brown about 9 inches thick. Subsoil dark yellowish-brown about 17 inches thick. Underlying material is dark yellowish-brown stratified silt loam that contains less prominent layers of loam. Moderate in content of organic matter. Available water capacity is high, and permeability is moderate. Runoff is slow.
Degree Slope: 0%
Woodland Suitability Group: 1o8
Site Index: (95-105- no rating for upland oaks)
Growth range potential (Tulip poplar-no rating for oaks): 375-450 bd.ft./acre/year
Management Concerns: Flooding between December and June

Access

A firelane/disabled hunters trail off of Cold Friday Road runs by this tract a short distance to the north. Off of this firelane is an old road bed that enters this tract. This old road was partially mapped, but became hard to distinguish in some areas. It would take some work to repair this road to be usable once again, but it acts as the best access for this tract. It skirts the steeper slopes/cliffs between the firelane and the tract.

Boundary

This tract is surrounded by the Indian Creek on three sides. The northwestern boundary is the only major boundary not defined by the water way. This portion is defined by one of the drainages of the slope. The records show the presence of a cornerstone at the section corner bordering both private and state property. This stone was searched for, but not located during the time of the inventory.

Wildlife

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.

The presence of cavity trees meets the minimum level for the 7"+ and 11"+ size classes and the optimal level for the 19"+ class. The tract does meet the optimal requirements for snags in the 5"+ and 9"+ size classes and also the minimum requirements for the snags in the 19"+ class. Furthermore, there are an insufficient number of large legacy trees within this tract. The lower number of large legacy trees is likely due to the 50 acre cedar stand.

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

Wildlife Habitat Feature (Tract Wide)

Category	Maintenance level	Optimal Level	Inventory	Available Above maintenance	Available Above Optimal
Legacy Trees *					
11"+	1143		1340	197	
20"+	381		331	-50	
Snags (all species)					
5"+	508	889	2948	2440	2059
9"+	381	762	801	420	39
19"+	63.5	127	82	19	-45
Cavity Trees (all species)					
7"+	508	762	709	201	-53
11"+	381	508	476	95	-32
19"+	63.5	127	268	205	141

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

Indiana Bat

As most management activities currently are only performed in the winter months due to Indiana bat guidelines, it is unlikely that direct harm will come to the Indiana bat as they are hibernating in 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 stand contains a surplus of live trees in the diameter classes between 11 and 20 inches in diameter and a deficit in those greater than 20 inches in diameter. The lower amount of larger trees is most likely due to the 50 acre cedar stand which housed few large trees but comprised the largest area in the tract. The snags and cavity trees meet the minimal requirements for all size classes and the optimal requirements for snags with 5"+ and 9"+ diameters and cavity trees with 19"+ diameters.

Recreation

A horse trail runs north of the northwestern boundary of the tract but does not enter the tract. There is an old road bed that enters the tract from this horse trail but is not likely used frequently. Signs of hunting were seen in the tract, suggesting this is the main recreational use of this tract. However, due to the tracts remote location, it likely does not attract a large amount of hunters.

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 Description, Prescription, and Proposed Activities

Cedar (50 acres)

The Cedar stand is the largest stand of the tract and is located within the center of the tract, surrounding a one of the Oak Hickory stands. The total volume of the stand was 10,280 bf/ac with a basal area of 143.5 sqft/ac. Of this, 8,740 bf/ac and 96.2 sqft/ac were eastern red cedar. The majority of the cedar trees were 5-12 inches in diameter. There were also a smattering of hardwoods in the stand including oaks, maples, hickories, and yellow poplar. There were also pockets of the Mixed Hardwoods stand and fingers of the Oak Hickory stand within the Cedar stand.

This stand would benefit from a heavy harvest removing a great majority of the eastern red cedar present. By removing this species, the stand, which at the moment has a high basal area, will have reduced competition. Likewise, a portion of the hardwoods that are of poor quality or non-desirable species (redbud, ironwood, and sassafras) should be removed. The harvest would remove roughly 86.4 sqft/ac and a volume near 7,500 bf/ac.

Due to the comparative low market for cedar and substantial amount of this species, this sale would need to be marketed to loggers who sell to a mill specializing in this

softwood. Because of the requirement for a specialized mill, this sale should be performed at a different time than that for the Mixed Hardwoods and Oak Hickory stands. This sale might be performed first due to the fact that the skid trails for the other stands would need to go through this stand.

Mixed Hardwoods (42 acres)

The Mixed Hardwoods stand surrounds the Cedar stand and borders the Indian Creek. There are also a couple of small pockets of mixed hardwoods in the Cedar stand. This stand housed some of the largest trees within the tract, having multiple over 30 inches in diameter. The total volume from this stand was 10,850 bf/ac and a basal area of 138.5 sqft/ac. The largest portion of the volume and basal area was yellow poplars that were both large and had good form.

This stand has reached the point where a harvest would be advisable. The large amount of large trees shows the stand is approaching maturity and by performing the harvest soon, the trees will be removed before they begin losing quality and volume due to decay and declining growth rates. The harvest should remove roughly half of the basal area and volume.

As previously described, due to the large difference in the harvests, this harvest should be separate from of the Cedar stand.

Oak Hickory (33 acres)

The Oak Hickory stand was located in the middle of the Cedar stand and also to the north of that stand. Like the Mixed Hardwoods, this stand is approaching maturity. At the moment there is a volume of 7,570 bf/ac and a basal area of 122.1 sqft/ac. The main components of this stand in terms of volume were black oak, red oak, and white oak. Among these trees were multiple larger trees and those of quality grade.

Like the Mixed Hardwoods stand, this stand should have a harvest before becoming over-mature. The harvest in this stand would remove 3,340 bf/ac (51.4 sqft/ac) leaving 4,230 bf/ac (70.6 sqft/ac). The harvest would follow that described for the Mixed Hardwoods stand, removing some larger trees before they lose volume and leaving some as a seed source.

As previously described, due to the large difference in the harvests, this harvest should be separate from that of the Cedar stand.

COMPARTMENT 23 TRACT 13

PROPOSED ACTIVITIES	**DATE**
Improve access road from Kintner Road	2012-13
Hardwood harvest	2014-15
TSI in hardwood harvest area	2015-16
Red cedar harvest	2015-16
Crop tree release in regeneration openings in hardwood area	2030
Inventory	2035
Next hardwood harvest	2040

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