Indiana Department of Natural Resources
Division of Forestry

DRAFT

Resource Management Guide

Harrison-Crawford State Forest **Compartment: 29 Tract: 06**
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Acres Commercial Forest: 36
Acres Noncommercial Forest: 0
Acres Permanent Opening: <1
Acres Other: 0

Basal Area >= 14 inches DBH: 57.08 sqft/ac
Basal Area < 14 inches DBH: 42.38 sqft/ac
Basal Area Culls: 5.4 sqft/ac
Total Basal Area: 99.46 sqft/ac

Acres Total: 36

Number Trees/Acre: 214

Species	Harvest Volume(MBF)	Leave Volume(MBF)	Total Volume(MBF)
Black Oak	15.49	7.72	23.21
Chestnut Oak	6.00	8.73	14.73
Yellow Poplar	5.63	23.21	28.84
Northern Red Oak	5.36	32.24	37.6
White Oak	4.55	40.78	45.33
Scarlet Oak	4.04	2.16	6.2
Basswood	3.29	0	3.29
Virginia Pine	2.67	0	2.67
Sugar Maple	2.57	5.01	7.58
Blackgum	2.46	2.61	5.07
Shortleaf Pine	1.86	0	1.86
White Ash	1.74	0	1.74
Sassafras	1.60	0	1.6
Pignut Hickory	0.81	1.97	2.78
Shagbark Hickory	0	0.58	0.58
Persimmon	0	0.44	0.44
American Beech	0	0	0
American Elm	0	0	0
Black Cherry	0	0	0
Dogwood	0	0	0
Red Maple	0	0	0
Total	58.07	125.45	183.52
Total per Acre	1.61	3.45	5.06

Location

This tract is located in Harrison County Indiana, in sections 12 and 13, T4S, R2E, in the general region of the State Forest known as the Cold Friday area.

General Description

This tract is made up of two main stands; Mixed Hardwoods (11 acres) and Oak Hickory (25 acres). There is also a permanent opening in the southern section of this tract. The opening is less than an acre in size and is one of multiple openings on this ridge top which were made as a wildlife project. The Mixed Hardwoods stand can be found on the ridge top and has qualities of an old field covertype. The Oak Hickory stand is on the slopes and valleys in the tract, taking up the largest portion of the land. It might be noted that the inventory indicates that the top 2 species (black and chestnut oaks) in harvest volume are far surpassed in the leave volume category by yellow poplar, n. red oak, and white oak. This suggests a definite transition in species dominance taking place.

History

This tracts land was obtained in two separate segments. The portion that is in section 12 was purchased as a part of a 160 parcel from Kintner in1950. The portion of land in section 13 was a part of a 762 acre purchase from Brewster in 1934. By 1940 the ridge top and more gently sloping areas of the Brewster parcel in this tract had been abandoned to farming and was already showing significant invasion by native early succession tree species. On May 30, 1985, a harvest in this tract was sold in combination with the adjacent tract 7 to Chester Stem Co. of New Albany. There were 32,907 bd.ft. from tract 6 included in this sale contained in 200 trees, with an additional 38 trees marked as cull. The top species in volume sold was yellow poplar, although 5 of the top 6 species were made up of oaks, with northern red oak having been at the top, followed by black oak, chestnut oak, white oak, and scarlet oak in that order. The sale area covered about 27 acres on all but the flatter area of the ridge top. Approximately 1,112 bd.ft. per acre and 8 trees per acre were removed in that operation, which would have been an improvement harvest. No regeneration openings appear to have been created during that effort. In the late 1980s, the Division of Fish and Wildlife put forth a significant effort to maintain existing and create new permanent wildlife openings on this State Forest. There is one of these openings present on tract 6.

Landscape Context

2906 is near the eastern edge of a contiguous body of land owned by the state of Indiana. It is completely surrounded by state land. However, private property is less than 1/8 mile to the east. This private land is a sizeable area, comprised of a mixture of forestland, grassland (mostly pasture), and single family residences or small farms. The immediate surrounding area of this tract is forested, being mainly deciduous hardwoods. There are several acres of non native pines in the tract adjacent to the east and to the north of tract 6.

Topography, Geology, and Hydrology

Tract 6 is a gently sloping parcel with primarily northerly aspects. Change in elevation is moderate, ranging from 680 to 870 feet above sea level, a change of 190 feet. While there should be some limestone near the surface at the lower measure, at this elevation, this tract should contain mostly sandstone as bedrock. No signs of karst features were found within this tract. The tract drains into what is historically called ‘Briles Hollow’, which flows to Potato Run Creek, that eventually empties into the Ohio River about 4 miles from the tract.

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

Hagerstown Silt Loam (HaC2, HaD2, HgC3, HgD3, HgE3) Deep, moderately sloping to moderately steep, well-drained soils on uplands. Surface layer is dark yellowish brown silt loam about 6 inches thick. The subsoil is about 46 inches thick. The depth to limestone is about 52 inches. Characteristically, this soil is eroded to severely eroded. Moderate in content of organic matter and medium in natural fertility. Available water capacity is moderate or high, and permeability is moderate. Runoff is rapid to very rapid.
Degree Slope: 6-25 %
Woodland Suitability Group: 1o1 or 1r2
Site Index: 85-95 (Upland Oaks)
Growth range potential (Upland oaks): 300-375 bd.ft. /acre/year
Management Concerns: Runoff and erosion

Tilsit Silt Loam (TlB2) Deep, gently sloping, modrately well drained soils on uplands. Fragipan in the lower part of the subsoil. Surface layer is dark yellowish-brown silt loam about 8 inches thick. Subsoil is about 38 inches thick. Depth to interbedded shale and sandstone bedrock is about 66 inches. Moderate in content of organic matter and low in natural fertility. Available water capacity is moderate and permeability is very slow. Runoff is medium.
Degree Slope: 2-6 %
Woodland Suitability Group: 3d9
Site Index: 70-80 (Upland Oaks)
Growth range potential (Upland oaks): 185-260 bd.ft./acre/year
Management Concerns: Erosion, wetness early in spring, available water capacity, lack of moisture in mid and late summer if rainfall is below normal.

Zanesville Silt Loam (ZaC2, ZaC3, ZaD2) Deep, moderately sloping and strongly sloping, well-drained soils on uplands. Avery firm fragipan in the lower part of the subsoil. Surface layer is very dark grayish-brown silt loam about 3 inches thick. The subsurface layer is about 5 inches thick and dark yellowish-brown. Subsoil is about 42 inches thick. The depth to sandstone bedrock is about 65 inches Moderate or low in content of organic matter and low in natural fertility. Available water capacity is high, and permeability is very slow. Runoff is medium to rapid.
Degree Slope: 6-18%
Woodland Suitability Group: 3d9
Site Index: 70-80 (Upland Oaks)
Growth range potential (Upland oaks): 185-260 bd.ft./acre/year
Management Concerns: Runoff and erosion. Fragipan limits the available water capacity.

Access

This tract can be accessed from a firelane that comes off of Cold Friday Road. This firelane is a large loop with both entrances coming off of the same road. The southern entrance is preferred due to the quality of the road and less hilly stretches. The tract itself is close to being at equidistance from both entrances.

Boundary

The drainage (Briles Hollow) acts as a well defined boundary for the northern section of this tract while a ravine between two fingers of the ridgetop makes up the western boundary. The firelane does not follow the southern boundary line perfectly but is near enough to be used in determining the southern boundary. The eastern boundary is not well defined, it somewhat follows the edge of the ridgetop but not perfectly.

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 prominent presence of oaks in the overstory of this tract makes the area ideal for many types of wildlife. The hard mast produced by the oaks provide a food source for species such as white-tailed deer, wild turkey, raccoons, opossums, and forest rodents. A sufficient number of standing snags also provide habitat and structural diversity for forest animals providing both shelter and a food source to many forest species.

In terms of cavity trees, there is a deficit for all size classes for the maintenance level. Any management that occurs in this site needs to avoid felling cavity trees in order to reach the wildlife goals. As cavities provide a den for many species, this factor is one that should be improved in order to increase the suitability for wildlife in this tract. While the inventory showed a low amount of cavity trees, it was conducted in the summer months when it is difficult to identify possible cavities in the trees. As a result of the time of inventory, it is possible that there are a larger amount of cavity trees that recorded.

Indiana Bat

As management activities currently are only performed in the winter months due to voluntary adherence to Indiana bat management recommendations suggested by the USFWS, 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 the moment this stand 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. There are not enough snags in the 19"+ size class to meet the Indiana bat requirements. Girdling trees to create snags would be an acceptable method to increase the amount of large snags for the bat due to the surplus of 20"+ bat trees per acre.

Wildlife Habitat Feature (Tract Wide)

Category	Maintenance	Optimal	Inventory	Available	Available

	level	Level		Above maintenance	Above Optimal
Legacy Trees *					
11"+	326.7		975	648	
20"+	108.9		161	52	
Snags (all species)					
5"+	145.2	254.1	750	605	496
9"+	108.9	217.8	417	308	199
19"+	18.15	36.3	20	2	-16
Cavity Trees (all species)					
7"+	145.2	217.8	26	-120	-192
11"+	108.9	145.2	26	-83	-120
19"+	18.15	36.3	11	-7	-25

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

Recreation

The only form of recreation noted during the inventory was the use of the firelane by equestrians. It is entirely possible that hunters utilize this area as it was appropriate habitat for white-tailed deer and turkey. The tract is too far away from any easy access to be legally used by any other forms of recreation.

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.

Invasive

Ailanthus was marked as being an upcoming problem within two area of the tract (marked on the map). These areas contained larger individuals in the canopy and Ailanthus regeneration. In both cases the areas of concern were both in pockets of blowdown.

Management Limitations

All soil types in this tract have a management concern of runoff and erosion. In order to limit these problems, any management activities need to be sure to leave downed dead wood and trees to hold the soil in place. Water diversions and other structures placed when harvesting should maintain soil stability and insure water quality.

Stand Descriptions

Mixed Hardwoods (11 acres)

This stand was located at the top of the ridge and the beginning of the slopes. The stand had a mildly high basal area of 95.6 sqft/ac and 4,370 bf/ac. The inventory showed that 1,480 bf/ac were harvestable at 23.9 sqft/ac while 2,890 bf/ac at 71.7 sqft/ac would remain. The majority of this volume and basal area was yellow poplar. A large mix of hardwoods was also present in lower quantities.

The stand should undergo a commercial thinning focusing on increasing diversity in the overstory while also managing for quality residual trees. In order to increase the diversity, the focus would be on the yellow poplar component. By removing this species, it would create an opportunity for the other hardwoods to increase their prominence in the overstory.

A special focus should also be given to cavity trees during the thinning. As there is a deficit at the moment, trees showing cavities should not be targeted as heavily as other trees in order to protect wildlife dens.

Oak Hickory (25 acres)

Adjacent to the Mixed Hardwoods stand, occupying most of the slopes, this stand makes up the majority of the tract. This covertype has a high basal area at 104.1 sqft/ac coming out at 5,780 bf/ac. Of this amount, 1,780 bf/ac was deemed removable at 26 sqft/ac, leaving 4,000 bf/ac at 78.1 sqft/ac. The basal area is dominated by white oak and sugar maple, both at 33 sqft/ac. The basal area consists mostly of white oak, red oak, and sugar maple while the board feet is mostly white oak followed by red oak, black oak and chestnut oak. Multiple other hardwood species are also present in lower quantities through the stand.

Due to the higher basal area of the stand, this area would also benefit from a thinning. This prescription would focus on keeping the stand an oak-hickory covertype, making the sugar maple a target species. The majority of the sugar maple present was in the understory making it important to have a timber stand improvement (TSI) before the harvest to reduce the amount of sugar maple. In terms of the overstory thinning, the focus needs to be on the residual. The lower quality individuals should be removed to increase the growth potential for the remaining trees.

A special focus should also be given to cavity trees during the thinning. As there is a deficit at the moment, trees showing cavities should not be targeted as heavily as other trees in order to protect wildlife dens.

Two patches of blowdown were found within the Oak Hickory stand in which Ailanthus had begun to dominate. In order to prevent this invasive species from spreading, the Ailanthus trees in the area should be treated with herbicide during TSI.

Open (<1 acre)

This small area was originally created as part of a wildlife habitat project and has multiple other openings in the neighboring tracts. At the moment the opening is covered with grasses and flowering plants commonly found in prairies and grasslands. The stand offers hunting areas for predators and habitat for rodents making it an important component of the forest.

Tract Wide Prescription

Due to the relatively small size of this tract and of the neighboring tract 2907, these two tracts should be combined in the management prescription. Both tracts have the same

covertypes and each covertype is similar in composition. For both tracts, the Oak Hickory and Mixed Hardwoods stands should be thinned based on an individual tree selection marking plan in order to reduce the amount of erosion and runoff. The thinning of each stand will follow the goals and marking guides described above. Likewise, consider combining a harvest in C29T5 with any sale, here. That tract is minimal in size and it would be logical to include it at that time for management.

TRACT ACCOMPLISHMENT RECORD
Compartment 29, Tract 6

DATE PLANNED	ACTIVITY / REMARKS	DATE COMPLETED
2012	Conduct Control Efforts on Ailanthus Trees in Tract	
2012	Submit Archeological Clearance Request to Do Access Road Improvements	
2013	Perform Follow Up Treatments on Ailanthus	
2013	Do Improvements to Access Road	
2014	Mark Timber Harvest in Conjunction with C29T7 and Maybe C29T5	
2015-16	Post Harvest TSI	
2034	Re-Inventory	

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