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

Harrison-Crawford State Forest | **Compartment: 19 Tract: 10**
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Acres Commercial Forest: 51
Acres Noncommercial Forest: 8
Acres Permanent Opening: 6
Acres Other: 0

Acres Total: 65

Basal Area >= 14 inches DBH: 34.90 sqft/ac
Basal Area < 14 inches DBH: 48.83 sqft/ac
Basal Area Culls: 2.24/ac
Total Basal Area: 83.34 sqft/ac

Number Trees/Acre: 299

Species	Harvest Volume(MBF)	Leave Volume(MBF)	Total Volume(MBF)
Yellow Poplar	48.79	66.89	115.68
Eastern Red Cedar	20.76	8.9	29.66
American Sycamore	16.68	38.09	54.77
American Beech	7.59	1.76	9.35
Basswood	4.88	0	4.88
Silver Maple	1.97	27.03	29
White Ash	1.72	4.65	6.37
Ailanthus	1.39	0	1.39
Black Walnut	0	7.28	7.28
Boxelder	0	5.33	5.33
Shumard Oak	0	1.65	1.65
Sugar Maple	0	1.29	1.29
Shagbark Hickory	0	1.28	1.28
Total	103.78	164.15	267.93
Total per acre	1.61	2.54	4.15

Location

This tract is located in Harrison County, Indiana, in sections 26 and 27, R2E T3S. It is the flatter parcel land bounded by the Blue River and the northeastern section of Greenbrier Knob.

History

The land in this tract was obtained in two segments. The area in section 26 was a part of a 194 acre parcel purchased in 1973 from Leffler. The land in section 27 was a part of a 56 acre purchase from Fisher in 1977. Nearby is an area in the Blue River that was commonly used as a crossing point called Mill's Crossing. As indicated on the USGS topography map, there were once a few 'weekend' fishing cabins along Blue River. There are traces of steps at the river banks where the users apparently parked along SR 62 and crossed the river to their cabins.

This tract is made up almost entirely of old fields and current fields.

The black walnut plantation was created in 1992 with the funding help of the Hardwood Plywood Manufacturers Association. Prior to this, this field area had been leased to farming to provide wildlife food with the leftover grain. Farming was last done in this area in 1988. The Division of Fish and Wildlife provided the equipment, manpower, and some of the supplies for site preparation and in exchange were allowed to plant and maintain the western portion of the field area as a wildlife habitat project. The plantation was planned to have 436 walnuts per acre, but with being machine planted, more per acre were planted. Chemical weed control and mowing was performed for the first 3 seasons. Corrective and side pruning was done the first 4-5 years. Site soil variability showed up relatively soon, with the central area performing poorly and the rest growing well. Some weeding was done ca. 1998 and 2005 to remove competition from naturally seeded in sycamore, box elder, and yellow poplar various locations within the planting.

A small, naturally occurring black walnut, just north of the plantation above, was thinned in the fall of 1992.

In 1990, a joint project with the Division of Fish and Wildlife, did site prep work for the above described plantation. In exchange, it was agreed to allow that division to establish and maintain a permanent wildlife opening within this field area just west of the plantation. In addition, they planted a strip of white pine across the former field to serve as a travel corridor and thermal protection for wildlife. This opening received periodic maintenance until about 2005.

General Description

This tract is the flatlands at the bottom of Greenbrier Knob and surrounded by the Blue River on three sides. The largest stand is the Old Field stand at 24 acres. This stand takes up most of the center of the tract, surrounding most of the Field stand (6 acres). Along the river on the southern edge of the tract is the Bottomland Hardwoods stand (10 acres) as well as a small island in the northeast formed by the Blue River splitting and taking two separate paths around the higher land. The northeastern section of land bordering the Blue River is an Old Field Degraded stand (5 acres) which is made up of low quality black walnut, box elder, and American elm. The last major stand is an 11 acre black walnut plantation in the eastern section of the tract. The black walnuts in this stand are still small, being mostly in the 3"-6" diameter classes.

Less significant stands that are still present include a clearing made for the power line right-of-way in the southwestern section of the tract, and an area that appears to be a floodplain for the Blue River which had few to no trees growing on it.

Landscape Context

1910 is part of a contiguous body of land owned by the state of Indiana and is surrounded by state owned land. The surrounding area is forested with the exception of the right-of-way formed by SR 62 north of the tract running parallel to the Blue River.

Topography, Geology, and Hydrology

This tract is relatively flat with a slight slope towards the Blue River. Over all change in elevation within the tract is around 40 feet. Nearer to the Blue River are minor changes in elevation in the form of small drainages. A change in the Blue River's original course has caused the northeastern point to be a small island.

The Blue River acts as the watershed for this area.

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

Elkinsville Silt Loam (ElA, ElB2, ElC2, ElC3) Deep, nearly level to moderately sloping, well-drained soils on terraces. Surface layer is about 12 inches thick. Subsoil is about 50 inches thick. The underlying material is stratified layers of silt or sand and minor amounts of gravel. Moderate in content of organic matter. Available water capacity is high, and permeability is moderate. Runoff is slow to rapid.
Degree Slope: 0-12 %
Woodland Suitability: 1o1
Site Index: 85-95
Growth range potential (Upland oaks): 300-375 bd.ft./acre/year
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

Markland Silt Loam (MaB2, MaD2, MaF, McD3) Deep, gently sloping to very steep, well drained and moderately well drained soils on terraces. Surface layer is dark grayish-brown silt loam about 3 inches thick. Subsurface layer is dark-brown silt loam about 4 inches thick. Subsoil is about 23 inches thick. The underlying material is yellowish-brown stratified silty clay and silty clay loam that has less prominent layers of silt loam. Moderate or low in content of organic matter and low in natural fertility. Available water capacity is high, and permeability is slow. Runoff is medium to very rapid.
Degree Slope: 2-70%
Woodland Suitability Group: 3r18
Site Index: 70-80 (Upland Oaks)
Growth range potential (Upland oaks): 185-260 bd.ft./acre/year
Management Concerns: Runoff and erosion

McGary Silt Loam (Mg) Deep, nearly level, somewhat poorly drained soils on terraces. Included with it in mapping were a few small areas of gently sloping eroded soils and areas where there is a loess cap more than 14 inches thick. They formed in calcareous lacustrine material. The native vegetation was mixed hardwoods. The surface layer is grayish-brown silt loam about 8 inches thick. The subsoil is about 37 inches thick. The upper 6 inches is grayish-brown and yellowish-brown firm silty clay loam, and the next 16 inches is yellowish-brown and grayish-brown very firm silty clay. The lower 15 inches is gray very firm silty clay that has dark brown mottles. The underlying material is gray silty clay loam.
Degree Slope: 0-2%
Woodland Suitability Group: 3w5
Site Index: 70-80
Growth range potential (Upland oaks): 185-260 bd.ft./acre/year
Management Concerns: Wetness

Access

Traditionally, the access to this tract has been from SR62, then fording Blue River at a location known as Mills Crossing. Access via this route is unreliable, since the river level must be low enough to allow vehicles and equipment to ford. Additionally, the annual flooding leaves a silt load in the south ramp which has to be cleaned out to allow passage. Subsequent to the acquisition of Greenbrier Knob in 1999, access development was started on that acquisition. That route begins at the firelane that enters the woods near the Fire Tower and eventually goes over the east side of Greenbrier Knob. This development has more work needed to improve the feasibility of it serving access to the tract.

Boundary

The Blue River acts as the northern, eastern, and western boundary for the tract. The southern boundary follows the base of the north side of the Greenbrier Knob hill. No man-made boundary markers were found in the inventory but the geographical ones were definite enough to not leave any doubt as to the tracts boundaries.

Wildlife

A Natural Heritage Database Review was completed for the tract. If Rare, Threatened or Endangered species (RTE's) were identified for M0701, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

As a tract dominated by old fields and relatively young reforested areas it would not be expected to have even moderate numbers of cavity, snags and legacy trees. And it does not, as noted in the table below.

Despite the amounts of legacy, snag and cavity trees, the tract does provide multiple habitats for wildlife. The presence of the field, forest, and the interface between the two creates habitats for multiple forest mammals as well as a wide variety of bird species. The presence of the Blue River and its riparian zone creates further habitat opportunities.

Wildlife Habitat Feature (Tract Wide)

Category	Maintenance level	Optimal Level	Inventory	Available Above maintenance	Available Above Optimal
Legacy Trees *					
11"+	585		370	-215	
20"+	195		96	-99	
Snags (all species)					
5"+	260	455	466	206	11
9"+	195	390	190	-5	-200
19"+	32.5	65	16	-16	-49
Cavity Trees (all species)					
7"+	260	390	166	-94	-224
11"+	195	260	111	-84	-149
19"+	32.5	65	36	4	-29

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

Indiana Bat

As management activities currently are only be 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 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 meets snags targets in the 5"+ diameter class, and cavity trees 19"+ in diameter. All other classifications for cavity, snags, and legacy trees are at the lower levels expected for the site for reasons discussed.

Due to not being able to meet the maintenance level in most of the categories listed above, this tract does not currently offer a quality roost tree habitat to the Indiana bat.

However, due to its semi-open nature and proximity to the Blue River, it should provide desirable feeding habit for this species.

Recreation

Also, the presence of deer and turkey offers a site to be used by hunters while the blue river allows for fishing. Although not a legal horse trail, this tract contained a firelane commonly used by equestrians.

Cultural

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

Invasive

Some Ailanthus was found in the overstory near the Blue River in the central section of the tract. This should be taken care of before the seeds spread to the field where it can take over without any competition. There were also cases of autumn olive in the black walnut plantation that should be treated when cultural work is done in that planting.

Management Limitations

The soil types in this tract have a management concern of either runoff and erosion or occasional wetness, especially in the winter months. While erosion should not be too large of a concern due to the overall gradual slopes, the seasonal wetness should be noted before any equipment is used in the area to avoid damage to the soils. The seasonal wetness of the Elkinsville soil type has shown itself by inhibiting the growth of the planted black walnut where it occurs on that soil type. Likewise, the invasive species should not be treated with herbicides during the wet periods to avoid it spreading to other water sources or unintended species.

Summary Tract Silvicultural Description, Prescription, and Proposed Activities

This tract has a diameter distribution that does not follow an obvious trend, likely due to the drastic difference of the stands present. Overall, there are a large number of small trees throughout the tract due to the plantation and Old Field Degraded stand. The Old Field and Bottomland Hardwood stands both have larger trees, but are still mostly less than 20" in diameter.

Black Walnut Plantation (11 acres)

This stand is still young, containing few trees in the pole or sawtimber classes. The trees were almost completely black walnut with a few white ash individuals present. The basal area of black walnut in the stand is 65sqft/ac with 538 stems per acre. Tall grasses, shrubs, and autumn olive were also found in between the rows of black walnut.

The growth performance of this planting has varied according to the soil types the trees are in. The areas with better soils are doing well and should be thinned to release the desirable crop trees. These better trees should have a crown touch release done on 2-3

sides during the first precommercial thinning. Treat autumn olive and any other unwanted competing species while doing this work. The effort will most likely require a trek over Green Briar Knob with tools and supplies, making it a significant undertaking, just to access it. Plan on another precommercial thinning within another 10 years. The portions of the stand found in the less desirable walnut sites are probably not worth the effort to do any cultural work to other than any needed invasive control.

Bottomland Hardwoods (10 acres)
This stand, being located along the Blue River, contained the largest trees on average throughout the tract. Overall, it contained 5,960 bf/ac and 84.5 sqft/ac. Of this, 1,620 bf/ac (18.4 sqft/ac) was deemed harvestable at this time which would leave 4,340 bf/ac (66 sqft/ac). The largest amount of volume in the tract comes from American sycamore followed by sugar maple. After these two species the stand is made up of a conglomeration of species, many from the surrounding stands.

Due to this stands proximity to the Blue River, including an island surrounded completely by the waterway, most of this stand is not prescribed for active management, short of invasive control. The low basal area suggests that it is not overcrowded and offers an opportunity for increased growth. Meanwhile, if a harvest would occur, it would be on a small area of land (as the island is unreachable), making it not economically feasible and present water quality concerns . It will be best to defer a harvest in the general stand until sufficient volume accumulates to provide an economically feasible harvest.

Field –Wildlife Opening(6 acres)
This stand has next to no trees in it, only a few occurring in a few small scattered pockets. The field contains mostly grasses and prairie flowers and has a mowed path surrounding it. The Division of Fish and Wildlife discontinued maintenance of this opening some time ago. Nevertheless, if opportunities arise to perform mowing, that measure should be taken to maintain the open habitat.

Old Field (24 acres)
Both the largest and most diverse, this stand is found in the center of the tract. This stand has a total volume of 7,850 bf/ac (126.9 sqft/ac), of which 3,710 bf/ac (45.3 sqft/ac) was deemed harvestable, leaving 4,150 bf/ac (81.6 sqft/ac). 2,100 bf/ac of the harvestable volume came from yellow poplar with close to 1,000 bf/ac from eastern red cedar.

While the stand has a basal area and volume suggesting a harvest, the size of the stand along with the distance from the main roads will make harvesting problematic, at best. Unless it can receive management in combination with, perhaps, 1902 immediately to the south, this stand should wait for a harvest until a time that access becomes feasible.

Old Field Degraded (5 acres)
This stand was made up of black walnut, boxelder, and American elm. The quality of the trees was poor and the stand contained a large amount of grasses and shrubs (mainly blackberry and raspberry). This stand offers currently offers little economic benefit due to its size and overall quality. While most transitions from field to forest within this tract

are sudden, this one is gradual. Because of the slow transition, this stand increases the fringe area for the tract, making it more beneficial to wildlife while the berries and low branches offer a food source. As mentioned, the walnut received a thinning in 1992. Periodically assess to see if another treatment is needed to encourage their growth.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Thin black walnut plantation	2014-15
Treat ailanthus	2014-15
Re-enter tract for inventory	2019
Thin black walnut plantation	2025

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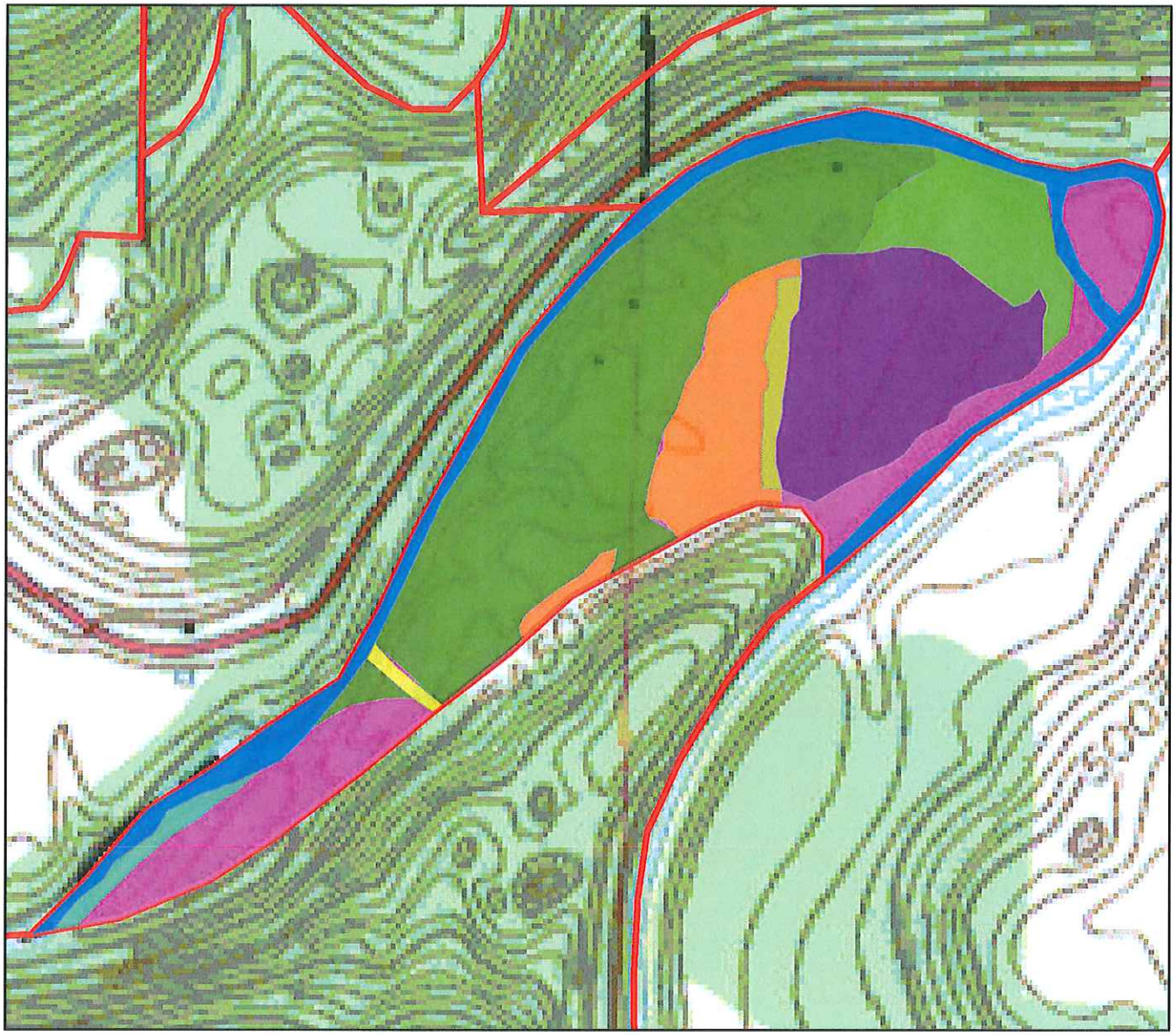
Tract 1910
Harrison-Crawford State Forest



0.25 0.125 0 0.25 Miles

Legend

stands

- Black Walnut
- Bottomland Hardwoods
- Field
- Flood Plain
- Old Field
- Old Field (Degraded)
- Power Lines
- River
- White Pine