Resource Management Guides
Harrison-Crawford State Forest
30-day Public Comment Period (December 17, 2024 – January 15, 2025)

The Indiana State Forest system consists of approximately 160,251 acres of primarily forested land distributed across the state. These lands are managed under the principle that we're stewards of this land for the future. This work is guided through legislation and comprehensive scientific national and international forest certification standards which are independently audited to help insure long-term forest health, resiliency, and sustainability.

Resource management guides (RMGs) are developed to provide long-term, scientific forest management planning tailored to each forest compartment (300-1,000 acres in size) and tract (10 - 300 acres in size). There are 1,590 tracts across the state forest system statewide. Annually, 50-100 tracts are reviewed, and these guides are developed based on current assessments. Through science-based management practices, we prescribe management actions on select tracts every 15-25 year, diversifying the forested landscape and sustaining ecosystems.

The RMGs listed below and contained in this document are part of the properties annually scheduled forest inventories under review for Harrison-Crawford State Forest.

Compartment 19 Tract 1
Compartment 19 Tract 3
Compartment 20 Tract 5
Compartment 20 Tract 6
Compartment 20 Tract 7

To submit a comment on this document, go to:

https://www.in.gov/dnr/forestry/state-forest-management/public-comment/submit/

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 and review posted at:

https://www.in.gov/dnr/forestry/state-forest-management/public-comment/

Note: Some graphics may distort due to compression.

Harrison Crawford State Forest	Compartment: 19	Tract: 01
Forester: Wayne Werne	Date: 6/19/2022	Acres: 67
Management Cycle End Year: 2044	Management Cycle Length: 20 Years	

Location
Tract 6341901 is in section 2, T4S, 2E, in Harrison County, Indiana, approximately 10 miles west of Corydon, Indiana. It can be accessed off State Road 462 shortly after the O'Bannon Woods State Park entrance gate.

General Description
The tract consists of mesic oak-hickory, mixed hardwood, conifer (in separate stands of planted eastern white pine and Virginia pine), and young forest (within the oak-hickory and former beech-maple) cover types, with most of the acreage being mesic oak-hickory. The areas currently covered in pine were originally open farmland as evidenced by the 1940's aerial photos. The young forest stand consists of two regeneration openings created during the last harvest that were previously occupied by beech-maple and oak-hickory that now probably are best described as young mixed hardwoods. The tract is primarily located on north and east aspects and some relatively flat areas as well.

History
- 1932 – majority of tract acreage in the northern portion was purchased from John & America Conner, W. Rucker, Lucille Rucker, and Nora Rucker for $5 per acre.
- 1932 – southern portion of the tract was acquired from John & Charity Green, John Morris, and Mollie Curts (administrator of estate of Green/McAdams) through condemnation via eminent domain for approx. $6.50 per acre.
- 1976 – Timber sale conducted in this tract along with tract 6341903 totaling 104,000 board feet, made up primarily of northern red oak, sugar maple, and American beech. It is unknown what portion of this total came from tract 6341901, but likely the minor portion due to much smaller acreage. Sale was sold to Coffman and Jacobs for $0.106 per foot.
- 1980 – A small amount of white pine along the fire trail was harvested.
- 2003 – Forest inventory and management guide completed by Dwayne Sieg showing volume of tract at 6,344 bd ft per acre.
- 2006 – Timber sale conducted in this tract along with tract 6341903 totaling 169,000 board feet (84,300 bd ft from tract 6341901), made up primarily of black oak, white ash, northern red oak, and white oak (from tract 6341901). Sale was sold to Phil Etienne for $0.26 per foot.
- 2022 – Forest inventory and management guide completed.

Landscape Context
The landscape surrounding this tract is primarily (hardwood) forest with some agricultural crop and pastureland found to the east on nearby private lands. Some developed recreational infrastructure is present nearby on DNR property, but the whole area is rural in nature with little additional development.

Topography, Geology, and Hydrology
This tract contains mostly gently sloping hillsides with a northerly aspect. There are some relatively flat areas on the southern portion on the ridgetop. The watershed of this tract drains to the north and west into intermittent drainages that empty into Blue River about a mile to the west. Located in the tract may be various sinkholes, caves, and other karst features which will be buffered according to the Indian Logging & Forestry Best Management Practices 2022 BMP Field Guide.

Soils
The following soils are found on the tract in approximate order of importance.

WbF Weikert-Berks channery silt loams, 35-60% slopes Virginia pine SI is 45-53, est. growth is 75-100 bd. ft/ac/yr.

CoF Corydon stony silt loam, 20-60% slopes Upland oak SI is 65-75, Yellow-poplar SI is 80-90, est. growth is 155-220 bd. ft/ac/yr. for oaks and 260-335 bd. ft/ac/yr. for yellow-poplar.

GlE2 Gilpin silt loam, 18-25% slopes, eroded Upland oak SI is 70-80, Yellow-poplar SI is 90-100, est. growth is 185-260 bd. ft/ac/yr. for oaks and 335-415 bd. ft/ac/yr. for yellow-poplar.

ZaC3 Zanesville silt loam, 6-12% slopes, severely eroded Upland oak SI is 70-80, Yellow-poplar SI is 85-95, est. growth is 185-260 bd. ft/ac/yr. for oaks and 300-375 bd./ ft/ac/yr. for yellow-poplar

TlB2Tilsit silt loam, 2-6% slopes, eroded Upland oak SI is 70-80, Yellow-poplar SI is 85-95, est. growth is 185-260 bd. ft/ac/yr. for oaks and 300-375 bd./ ft/ac/yr. for yellow-poplar.

GpF Gilpin-Berks complex, 18-30% slopes Upland oak SI is 70-80, Yellow-poplar SI is 70-80, est. growth is 185-260 bd. ft/ac/yr. for oaks and for yellow-poplar.

GlD3 Gilpin silt loam, 12-20% slopes, severely eroded Upland oak SI is 70-80, Yellow-poplar SI is 90-100, est. growth is 185-260 bd. ft/ac/yr. for oaks and 335-415 bd. ft/ac/yr. for yellow-poplar.

Access
Access to this tract is via the paved road continuing off S.R. 462 into the main entrance to the O'Bannon Woods State Park and also via fire lane 204. This fire lane runs northwest down the ridge line and into tract 6341903.

Boundary
The northeastern boundary of this tract is an intermittent drainage that separates it from tract 6341906 to the northeast. The southern boundary is the paved entrance road to the property where the fire tower loop road is located. The southwestern boundary is another intermittent drainage that separates this tract from tract 6341905 to the west. And the northwestern boundary is a saddle on the ridgeline with more imperceptible intermittent/ephemeral drainages going downhill from this saddle to the aforementioned intermittent drainages that form the other

boundaries of the tract. Beyond this saddle demarcation is tract 6341903 to the northwest.

Ecological Considerations
This tract represents typical upland forest habitat, in addition to a component of planted pine, and some young forest habitat where a previous regeneration opening from the last timber sale has resulted in denser and smaller hardwoods currently. Consequently, it likely receives use from a typical assemblage of common game and nongame wildlife species. Hard mast food sources are provided by the oak-hickory stand, but another habitat component would come from the pine stands that retain their evergreen foliage in the winter. These stands provide denser cover for bedding areas, especially during the winter months.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags and legacy trees. Snags are standing dead or nearly dead trees. Snags provide value to a stand in the form of habitat features for foraging activity, den sites, decomposers, bird perching, and bat roosting. Snags eventually contribute to the future pool of downed woody material, which provides habitat for many ground-dwelling species and contributes to healthy soils. Legacy trees are live trees of a certain species and diameter class, that have potential future value to various wildlife species, if retained in the stand

Current assessments indicate the abundance of these habitat features meet or exceed recommended maintenance levels in all diameter classes.

A formal ecological review process, which includes a search of Indiana's Natural Heritage database is part of the management planning process. If Rare, Threatened, or Endangered species or communities were found to be associated with this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the population viability of those species or communities.

Recreation
Being centrally located near the entrance to the property and easily accessible, this tract likely receives a much higher amount of general recreational activity than many of the other tracts on the state forest. The Fox Hollow Horse Trail trailhead starts along the road on the south edge of this tract, and the trail traverses this tract along the dual use fire lane to the northwest. Since it is near the road and O'Bannon Woods State Park office and fire tower, this trail likely receives abundant horse riding use. Hunters commonly use the tract. Directly across the road from this tract to the south is the fire tower, and it also draws a lot of recreational visitations, which may include short hikes into this tract as well. Additionally, the area around the fire tower also serves as the trailhead for the Fire Tower Mountain Bike Trail that goes to the campground to the west, so it is often utilized by mountain bikers.

Cultural
Cultural resources may be present, but their location(s) is protected. Adverse impacts to significant cultural resources will be avoided during any activities.

Tract Subdivision Description and Silvicultural Prescription

Stand 1: Mesic Oak-Hickory – 31.1 acres
This stand (i.e., cover type) covers about half of the tract, and occupies the more sloping ground generally located mid and lower slopes on the northern and western portions of the tract that had not been cleared for farming in the past.

The total volume of the stand (8,479 bd. ft/ac) is composed primarily of white oak (3,492 bd. ft/ac), black oak (1,218 bd. ft/ac), and shagbark hickory (1,153 bd. ft/ac). The remaining 30% of the volume consists of pignut hickory, yellow-poplar, northern red oak, and various other species.

It contains a high volume of 8,479 board feet per acre of which 2,441 was classified as harvestable and 6,038 was classified as residual. This would remove 35 square feet of basal area, which would leave the residual stand with 66 sq. ft. Stocking would drop from 84% to about 55% with the indicated management.

The desired future condition of this area is a healthy stand of predominantly oak and hickory species to continue to produce hard mast food sources for wildlife and eventually quality wood products when harvesting takes place. To accomplish this, dying, declining, overmature, and/or low-quality trees would be selected for harvest to allow the most vigorous and best quality trees to remain and continue to grow and reseed the area. Openings created from harvesting would allow for the less shade tolerant species to establish a new cohort of seedlings for the future. Retaining shade intolerant tree species (like oak and hickory) while minimizing transition to shade tolerant species (like beech and maple) would be the goal here. Ideally, creating enough regeneration openings and other canopy gaps to allow for establishment and recruitment of oak species into the understory would help achieve these goals.

Since the last harvest in this stand was 18 years ago, and because it also currently contains a moderate amount of harvestable volume and a high amount of residual growing stock, the recommendation would be to rank this stand as a medium to high priority for conducting a harvest. Any timber sale would primarily include this entire stand as well as trees from the other stands in this tract. The majority (70%) of the harvest volume for stand 1 (2,441 bd. ft/ac) would be contained in black oak (761 bd. ft/ac), white oak (496 bd. ft/ac), and yellow-poplar (438 bd. ft/ac), with pignut hickory, shagbark hickory, chinkapin oak, and sugar maple making up of the remainder of the harvest volume. A timber sale in this stand would produce a range of between 60,000 to 90,000 board feet total.

Most of the stand would probably be harvested under a single-tree selection routine with larger regeneration openings (i.e., patch-cuts) targeting groups of low-grade trees or multiple large trees growing together. When possible, selection should also favor releasing future crop trees. The residual stand should be heavier to white oak, with a lesser component of other oak and hickory species, as well as mesophytic species. Application of a prescribed burn primarily in this stand would help to reduce the shade tolerant under and midstories that are taking over most of our forests in the absence of disturbance, and aid in regenerating and recruiting the more fire tolerant oaks and hickories. Burning this tract could be part of the future management, and if

implemented, a burn plan would be written to cover the specifics of that process.

Post-harvest timber stand improvement (TSI) should be performed to eliminate any residual cull or small pole-sized trees not cut during the harvest, as well as thin where necessary, complete any regeneration openings, and treat the understory to eliminate shade tolerant species in favor of oaks and other more desirable species. As always, any ailanthus present should also be treated and eliminated.

Stand 2: Mixed hardwoods – 21.6 acres

This stand covers about a third of the tract and was located along the upper slope and flat ridgetop portion of the tract on the south end. The total volume of the stand (5,757 bd. ft/ac) is composed primarily of sugar maple (1,985 bd. ft/ac) and yellow-poplar (1,348 bd. ft/ac), and eastern redcedar (839 bd. ft/ac). The remaining 42% of the volume consists of eastern white pine, Virginia pine, white oak, white ash, black walnut, and various other species. The presence of pine is due to the fact that the pine stands are deteriorating, and mortality has led to the transition to a more mesophytic stand in places.

This stand contains a volume of 5,757 board feet per acre of which 2,728 was classified as harvestable and 3,029 was classified as residual. This would remove 51 square feet of basal area, which would leave the residual stand with 57 sq. ft. Stocking would drop from about 93% to about 50% with the indicated management. These figures do include cedar as figured according to the cedar log scale.

The desired future condition of this area is a healthy stand of mixed mesophytic species adapted to the site to continue to eventually produce quality wood products when harvesting takes place. To accomplish this, dying, declining, and/or low-quality trees would be selected for harvest to allow the most vigorous and best quality trees to remain and continue to grow and reseed the area. Openings created from harvesting would allow for the less shade tolerant species to establish a new cohort of seedlings for the future.

Since the last harvest in portions of this stand was 18 years ago, and because it currently contains a moderate volume of harvestable material, the recommendation would be to rank this stand as a medium to high priority for conducting a harvest. Any timber sale would primarily include this entire stand as well as all of stand 1 with some trees from the other stands. The majority of the harvest volume for stand 2 (2,728 bd. ft/ac) would be contained in yellow-poplar (1,096 bd. ft/ac), sugar maple (414 bd. ft/ac), Virginia pine (414 bd. ft/ac), and white ash (247 bd. ft/ac). The remaining 20% would be contained in white oak, black walnut, eastern redcedar, and red elm. A timber sale in this stand would produce a range of between 50,000 to 70,000 board feet total. Most of the stand would probably be harvested under a single tree selection routine with larger regeneration openings targeting groups of low-grade trees or multiple large trees growing together. When possible, selection should also favor releasing future crop trees.

Post-harvest TSI should be performed to eliminate any residual cull or small pole-sized trees not cut during the harvest, as well as thin where necessary, complete any regeneration openings, and kill grapevines where present. As always, any ailanthus present should also be treated and eliminated.

Stand 3: Conifer – 8.3 acres
This stand is actually two different pine stands. There is an eastern white pine stand on the southeastern tip of the tract, and another one along the fire lane farther to the northwest. There is also a separate Virginia pine stand along the south edge of the tract where the fire lane enters the tract, but no inventory points fell within the Virginia pine stand, so the data represents only the white pine stand.

The total stand volume (8,577 bd. ft/acre) is composed primarily of eastern white pine (6,371 bd. ft/acre) and yellow-poplar (1,299 bd. ft/acre). The remaining 11% of the volume consists of black oak and sugar maple.

This stand contains a volume of 8,577 board feet per acre of which 1,299 was classified as harvestable and 7,278 was classified as residual. This would remove 23 square feet of basal area, which would leave the residual stand with 70 sq. ft. Stocking would drop from 80% to about 57% with the indicated management. A timber sale in this stand would produce a range of between 5,000 to 15,000 board feet total – most of it being old field poplar. The eastern white pine portion would be kept mostly intact as a diverse conifer stand close to the area of heavy recreational use for aesthetics, with some thinning possible. The Virginia pine stand would likely be liquidated since stands of this species are very prone to windthrow and eventually fall apart once mature.

The desired future condition of this area is a healthy stand of aesthetically pleasing eastern white pine that offers habitat diversity and aesthetics to visitors a short distance from the entrance road. The Virginia pine stand should be liquidated to convert it to a mixed mesophytic stand of hardwoods. This proposed management for the Virginia pine will also have the added effect of creating early successional habitat where a mostly open area interspersed with hardwood trees would be the resultant cover for about a decade. Eventually, the area would transition to a native hardwood stand of larger trees with natural succession. In the meantime, the early successional vegetation would provide diversity of habitat to many species of wildlife that utilize this type of habitat. Transitioning this stand to a temporarily more open habitat would also allow for more shade intolerant species like oak and hickory to potentially regenerate here, though yellow-poplar would likely be the dominant hardwood regenerating.

Since this stand intermingles with the more merchantable hardwood stands, there would likely be some trees included from here along with any timber sale taking place in the other stands. The inventory only picked up yellow-poplar as indicated harvest volume, but some thinning of the white pine and liquidation of the Virginia pine would be included as well. Timber harvest and post-harvest TSI should concentrate on releasing any oak regeneration – mostly with follow-up TSI. Finally, TSI would remove any leftover competing trees and allow a new stand of poplar and oak to establish itself and grow here. As always, any ailanthus present should also be treated and eliminated.

Stand 4: Beech maple (young forest) – 6.0 acres
This stand is actually made up of two old regeneration openings from the 2006 timber harvest, and the larger one in the northern tip next to the drainage was formerly stand typed as “beech-maple.” The creation of a regeneration opening here at that time targeted the beech, and now it is

a young mixed hardwoods stand. The other regeneration opening was located in the oak-hickory cover type and has also regenerated to mostly a mixed hardwoods stand of young trees currently. These areas make up a small portion of the tract, but would better be separately stand typed as young mixed hardwoods with very little standing volume currently.

These small areas are dominated with submerchantable and pole sized yellow-poplar, sycamore, black locust, American beech, redbud, and white ash with some residual larger sugar maple and hickory. The desired future condition of this area would be to allow it to continue to grow into a mature mixed hardwood stand as it currently is doing. Some TSI could be accomplished in this area to favor the poplar trees and the better-quality stems of other desirable species, as well as to control ailanthus and any invasive species establishing in the area.

The current forest resource inventory was completed in June 2022 by Wayne Werne. A summary of the estimated tract inventory results is in the table below.

Tract Summary Data (trees >11"DBH):

Species	# Sawtimber Trees	Total Bd. Ft.
Black oak	156	35,890
Black walnut	55	5,560
Chestnut oak	16	5,950
Chinkapin oak	11	4,840
Eastern redcedar	43	2,820
Eastern white pine	155	53,160
Northern red oak	57	21,590
Pignut hickory	129	24,380
Red elm	24	1,460
Shagbark hickory	285	33,970
Sugar maple	590	60,550
Virginia pine	58	9,710
White ash	26	5,800
White oak	300	102,500
Yellow-poplar	214	59,730
Total:	2,119	427,910

Summary Tract Silvicultural Prescription and Proposed Activities

Since the last harvest in this tract was 18 years ago, and because it also currently contains a moderate amount of harvestable material and residual growing stock, the recommendation would be to rank this tract as a medium to high priority for conducting a timber harvest. Due to the current condition of the stand, an improvement harvest is recommended and could be undertaken as early as this year, or the near future. Overall tract volume would be reduced by about a third. A marked sale in this tract would produce an approximate total volume of between 130,000 to 175,000 board feet.

Utilizing numbers from the last inventory in 2003, this tract has shown a very low growth rate of approximately 75 board feet per acre per year over the last 19 years after taking into account the

volume removed in the 2006 timber sale, which seems to be an anomaly since growth rates elsewhere on the forest range from 100 to 300 board feet per acre per year. This site seems to have productive soils and growth potential, so this lower growth rate could be due to mortality of the ash and possibly pine, or it could be an aberration of the sampling point placement between inventories. With the application of the proposed management, this tract should exhibit high and potentially greater growth and productivity by favoring the healthiest and best quality trees for a residual stand, while removing the declining trees.

Most of the tract would probably be harvested under a single-tree selection routine with larger regeneration openings (i.e., patch-cuts) targeting groups of low-grade trees or multiple large trees growing together. When possible, selection should also favor releasing future crop trees. The residual stand should be heavier to white oak, with a lesser component of other oak and hickory species, as well as mesophytic species. Application of a prescribed burn would help to reduce the shade tolerant under and midstories that are taking over most of our forests in the absence of disturbance, and aid in regenerating and recruiting the more fire tolerant oaks and hickories. Burning this tract could be part of the future management, and if implemented, a burn plan would be written to cover the specifics of that process.

Post-harvest TSI should be performed to eliminate any residual cull or small pole-sized trees not cut during the harvest, as well as thin where necessary, complete any regeneration openings, and treat the understory to eliminate shade tolerant species in favor of oaks and other more desirable species. As always, any ailanthus present should also be treated and eliminated.

Due to the proximity and similar stand types, this harvest should occur at the same time as adjacent tract 6341903, which is how previous sales occurred. This would minimize time spent during management activities to ensure the least effect on recreation, wildlife, hydrology, and other concerns mentioned in this plan.

Management activities will not intentionally remove snags, with a few exceptions of large recently dead trees or storm damage when possible, so the timber sale will not negatively impact that component significantly. Creation of more snags in this size class could be undertaken by girdling large cull trees in a post-harvest TSI operation.

Additionally, management activities involving a timber sale should not affect this habitat long-term from the perspective of any wildlife utilizing it due to the maintenance of a forested habitat on the tract. There may be some conversion of pine to temporarily open areas that will be allowed to succeed into native hardwoods, and this would change the character of the tract over time, but will not change it into a permanently nonforested cover type. Creation of regeneration openings and/or conversion of portions of the Virginia pine area into openings will create early successional habitat that will be beneficial to certain groups of wildlife dependent upon this habitat. Likely, early successional habitat created with such management will also benefit a wider segment of wildlife species that preferentially utilize such habitat for feeding and cover more so than later successional stage habitat.

Since this tract does not border a major stream, there should be no disruption of any potential travel corridors by forest management activities. The habitat on this tract in the context of the

surrounding landscape does not represent any special component that would be used more preferentially or exclusively by wildlife for traveling or dispersion, as riparian habitat might be, or as forest in a non-forested landscape might be. The small pond found nearby on the neighboring tract would provide a valuable water source for wildlife during dry periods, and also represent good habitat for reptiles and especially amphibians. The white pine stands would provide thermal cover during the winter and some specialized roosting habitat and overall diversity to the general habitat as well.

Since this tract represents a component of contiguous forest, it is possible that forest management activities might disrupt any forest interior species by creating edge habitat for generalist species to "invade" the area. This would possibly occur if regeneration openings were put in place that offered a habitat preferred by such generalist species which might move in and start using such habitat. In the context of the surrounding landscape, this tract represents a moderate chunk of forest in a matrix of surrounding forest land.

The 2022 BMP Field Guide will be followed throughout the harvest to ensure any management activities impact to soils is limited. Soil disturbance will largely be confined to the log yard and main skid trails. The BMPs will also ensure water quality is not permanently affected, and implementation of these BMPs will be contractually required of loggers.

Snags and coarse woody debris will remain at viable levels for wildlife after harvest and the harvest will not adversely affect the wildlife.

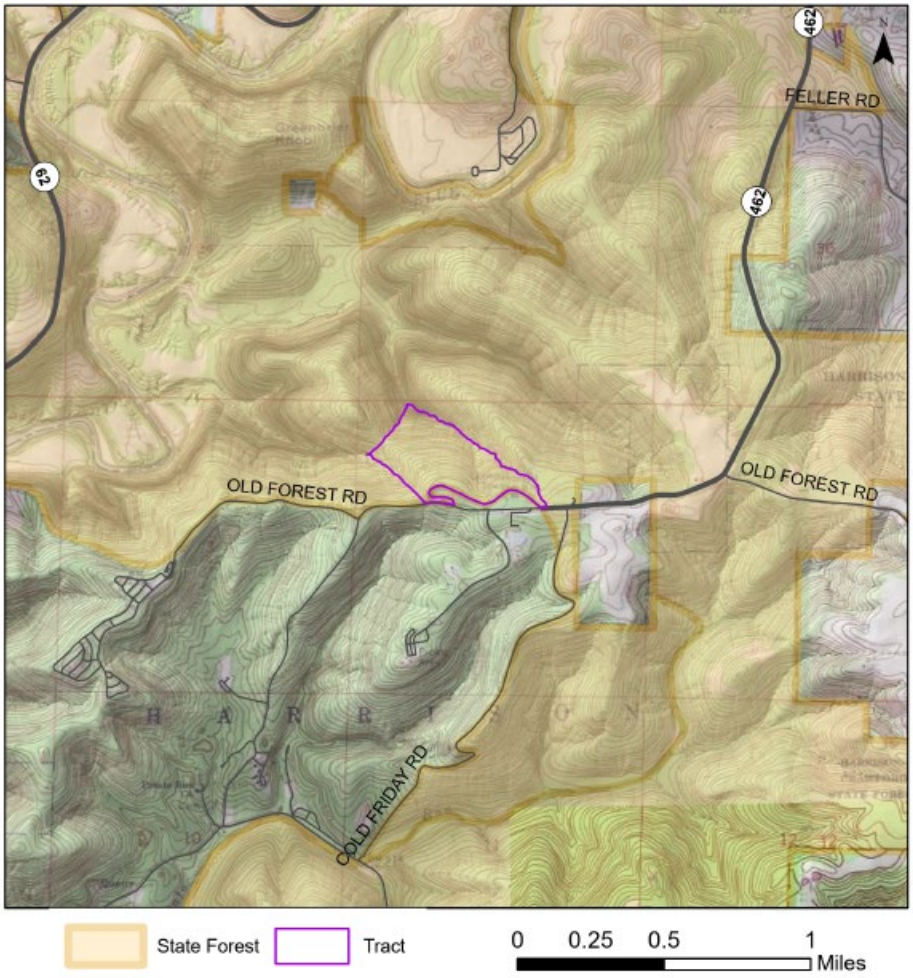
During the timber harvest, part of the horse and mountain bike trails would have to be temporarily closed for public safety. However, under current restrictions, this closure would only occur from November 16th to April 1st and would not affect most of the spring, summer, and fall recreation. Hunting opportunities should be improved by the maintenance of early successional habitat and the recruitment of hard mast producers such as oak and hickory which provide food sources for a wide variety of native wildlife.

Once the harvest is complete, post-harvest TSI should be conducted and then the stand should be revisited for regeneration opening and post-harvest checks in 3-5 years to ensure proper regeneration and growth is occurring. A crop tree release in the 2006 regeneration opening should be done at this time. In about 20 years, the stand should be revisited for another inventory and a new management guide can be created.

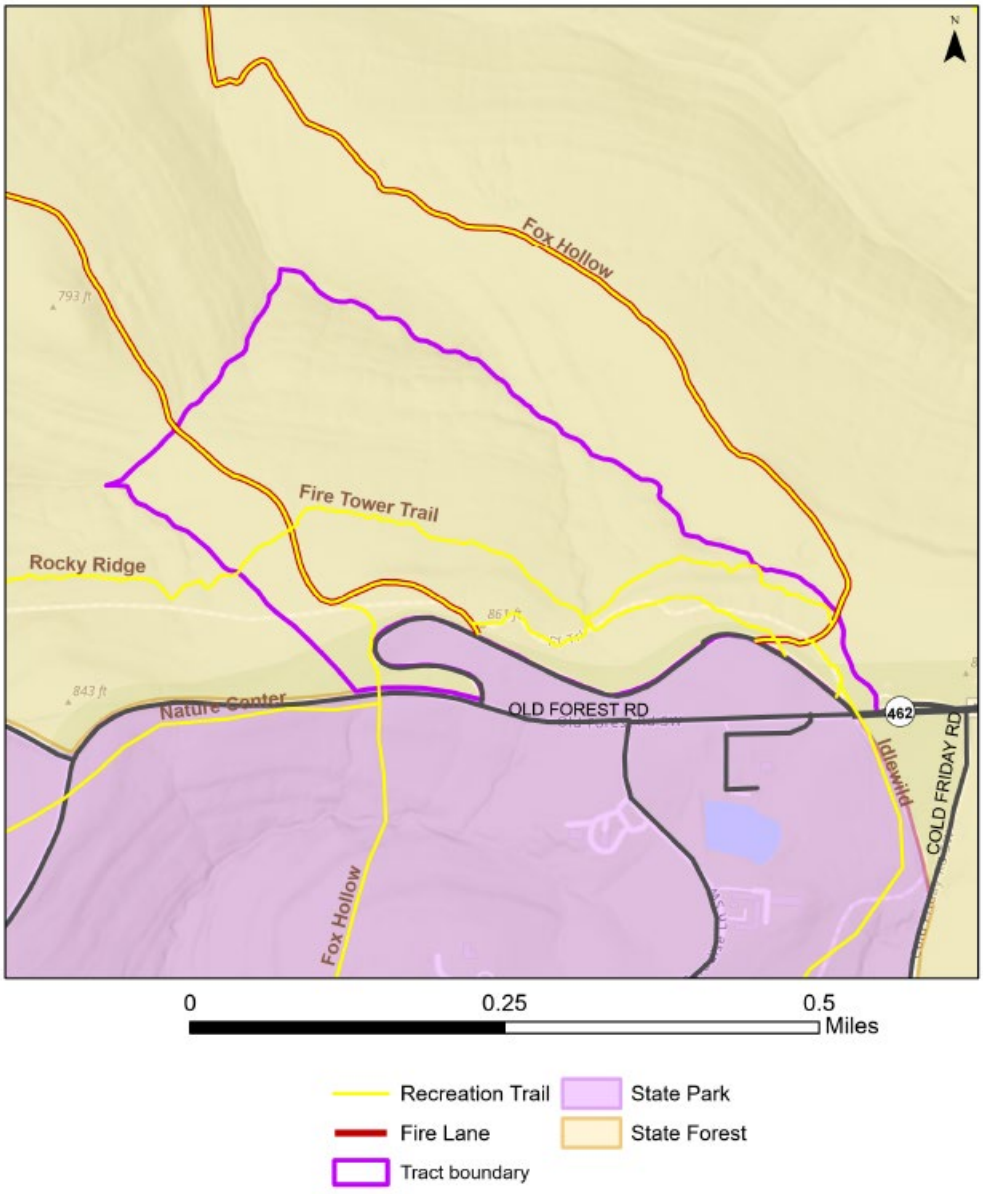
Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Mark Harvest	2025-2026
Sell Timber	2025-2026
Possible prescribed burn	2025-2026
Post-harvest TSI	2027-2028
3-year regeneration opening review	Three years after harvest
Next forest inventory	2042

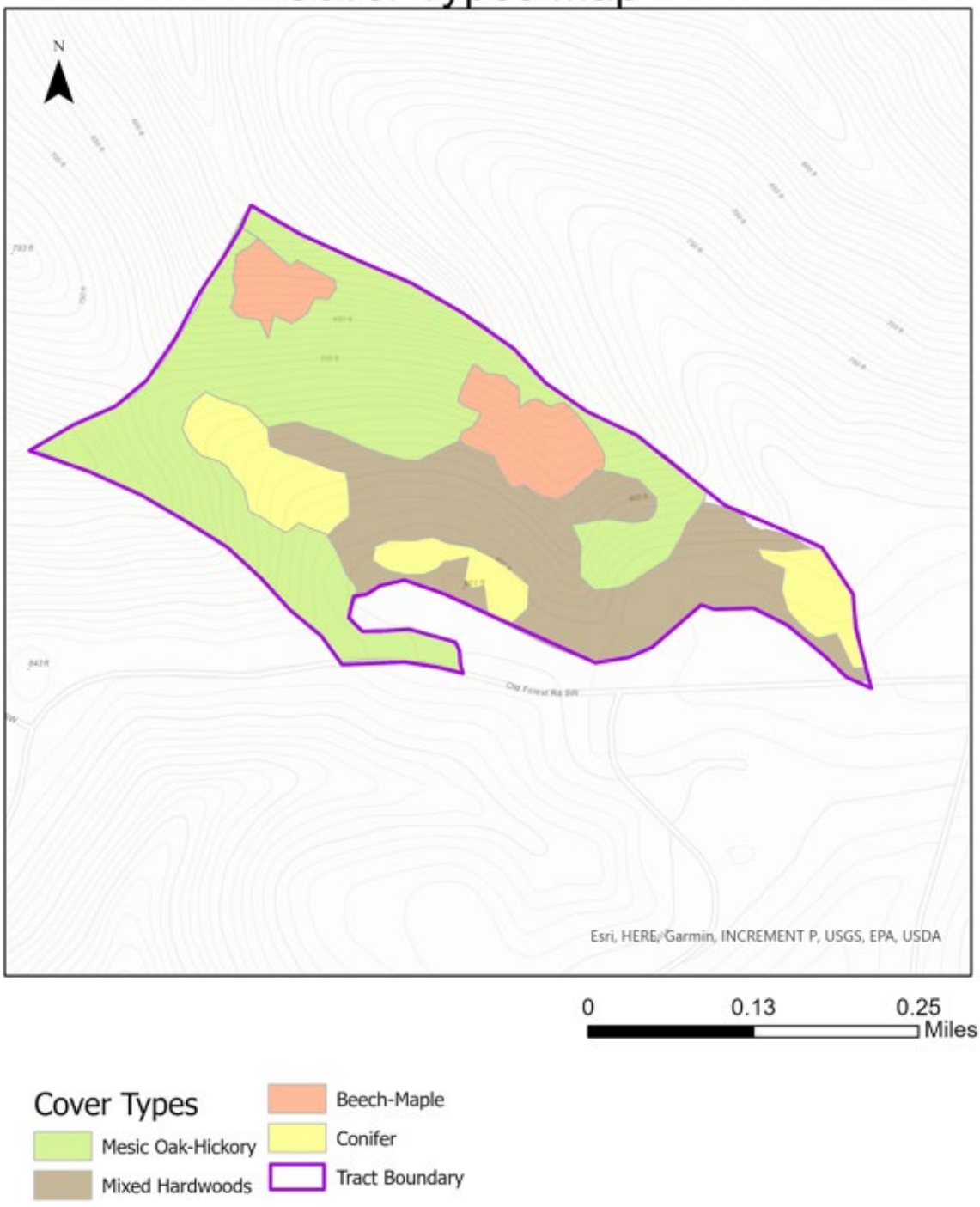
Harrison-Crawford State Forest
Location Map
Compartment 19 Tract 1



Harrison-Crawford State Forest
Compartment 19 Tract 1
Tract Map



Harrison-Crawford State Forest
Compartment 19 Tract 1
Cover Types Map



Harrison Crawford State Forest	Compartment: 19	Tract: 03
Forester: Wayne Werne	Date: June 2022	Acres: 225.3
Management Cycle End Year: 2044	Management Cycle Length: 20 Years	

Location
Tract 6341903 is in Sections 2 and 3, T4S, R2E, and Sections 34 and 35, T3S, R2E in Harrison County, Indiana, approximately 10 miles west of Corydon, Indiana. It can be accessed off State Road 462 shortly after the entrance gate into the O'Bannon Woods State Park.

General Description
The tract consists of mesic oak-hickory, dry oak-hickory, mixed hardwood, bottomland hardwoods, and young forest (within the mixed hardwoods) cover types, with most of the acreage being mixed hardwoods. The young forest stand consists of two regeneration openings created during the last timber harvest that were previously occupied by mixed hardwoods that now probably are best described as young mixed hardwoods with noticeably less volume present. The tract is located on all directional aspects and some relatively flat areas as well.

History
- 1931 – The central (majority) portion of the tract was acquired from Thomas Hudson for $5 per acre. This purchase has the distinction of being the first acquisition for the Harrison-Crawford State Forest.
- 1932 – The eastern portion of tract acreage was purchased from John & America Conner, W. Rucker, Lucille Rucker, and Nora Rucker for $5 per acre.
- 1977 – The western portion of the tract was acquired from Robert Davis through condemnation via eminent domain for $600 per acre.
- 1976 – Timber sale conducted in this tract along with tract 6341901 totaling 104,000 board feet, made up primarily of northern red oak, sugar maple, and American beech. It is unknown what portion of this total came from tract 6341903, but likely the larger portion due to larger acreage. The sale was sold to Coffman and Jacobs for $0.106 per board foot.
- 1976 – Black walnut sale involving tracts 6341903 and 6342808 removed 9,800 board feet in 30 trees sold to Wood Mosaic Corp for $11,250. Unknown what portion came from 6341903.
- 1980 – White pine sale of 19,000 board feet with some trees possibly coming from this tract along with several others. Records are sketchy with details.
- 1980s – Wildlife habitat opening created by Division of Fish and Wildlife in a level old field site in the western third of the tract.
- 2003 – Forest inventory and management guide completed by Dwayne Sieg showing volume of tract at 6,285 board feet per acre.
- 2005 – Timber sale conducted in this tract totaling 130,000 board feet, made up primarily of white oak, northern red oak, black oak, and sugar maple. Sale was sold to Williams Brothers for $0.40 per board foot.
- 2006 – Timber sale conducted in this tract along with tract 6341901 totaling 169,000 board feet (85,100 bd ft from tract 6341903), made up primarily of northern red oak, yellow-poplar, and sycamore. Sale was sold to Phil Etienne for $0.26 per board foot.
- 2022 – Forest inventory and management guide.

Landscape Context
The landscape surrounding this tract is primarily (hardwood) forest with some agricultural crop and pastureland found to the east on nearby private lands. Some developed recreational infrastructure is present nearby on Indiana Department of Nature Resources (IDNR) property, but the whole area is rural in nature with little additional development.

Topography, Geology, and Hydrology
This tract contains mostly gently sloping hillsides with all directional aspects. There are some relatively flat areas on the eastern portion on the ridgetop and on the western third of the tract by the Blue River in Fox Hollow. The watershed of this tract drains to the north and south into intermittent drainages that empty into Blue River on the west end of the tract. Located in the tract may be various sinkholes, caves, and other karst features which will be buffered according to the 2022 Best Management Practices (BMPs) Field Guide.

Soils
The following soils are found on the tract in approximate order of importance.

CoF Corydon stony silt loam, 20-60% slopes Upland oak SI is 65-75, Yellow-poplar SI is 80-90, est. growth is 155-220 board feet per acre per year (bd. ft/ac/yr.) for oaks and 260-335 bd. ft/ac/yr. for yellow-poplar.

GlD3 Gilpin silt loam, 12-20% slopes, severely eroded Upland oak SI is 70-80, Yellow-poplar SI is 90-100, est. growth is 185-260 bd. ft/ac/yr. for oaks and 335-415 bd. ft/ac/yr. for yellow-poplar.

GlD2 Gilpin silt loam, 12-18% slopes, eroded Upland oak SI is 70-80, Yellow-poplar SI is 90-100, est. growth is 185-260 bd. ft/ac/yr. for oaks and 335-415 bd. ft/ac/yr. for yellow-poplar.

Mg McGary silt loam Upland oak SI is 70-80, Yellow-poplar SI is 80-90, est. growth is 185-260 bd. ft/ac/yr. for oaks and 260-335 bd. ft/ac/yr. for yellow-poplar.

HgD3 Hagerstown silty clay loam, 12-18% slopes, severely eroded Upland oak SI is 85-95, Yellow-poplar SI is 90-105, est. growth is 300-375 bd. ft/ac/yr. for oaks and 335-450 bd./ ft/ac/yr. for yellow-poplar.

MaF Markland sild loam, 25-70% slopes Upland oak SI is 70-80, Yellow-poplar SI is 85-95, est. growth is 185-260 bd. ft/ac/yr. for oaks and 300-375 bd. ft/ac/yr. for yellow-poplar.

Hm Haymond silt loam Yellow-poplar SI is 95-105, est. growth is 375-450 bd. ft/ac/yr. for yellow-poplar.

HaD2 Hagerstown silt loam, 12-18% slopes, eroded Upland oak SI is 85-95, Yellow-poplar SI is 90-105, est. growth is 300-375 bd. ft/ac/yr. for oaks and 335-450 bd. ft/ac/yr. for yellow-poplar.

Access
Access to this tract is via the paved road continuing off S.R. 462 into the main entrance to the O'Bannon Woods State Park and then via fire lane 204 north of the fire tower a short distance through neighboring tract 6341901. This fire lane runs northwest down the ridge line and into tract 6341903, then follows it through most of the tract to the bottom of the hill into Fox Hollow.

Boundary
The southeastern boundary is a saddle on the ridgeline with more imperceptible intermittent/ephemeral drainages going downhill from this saddle to intermittent drainages that form the other boundaries of the tract. The northeast, north, and south boundaries are intermittent drainages beyond which are other state forest tracts. The western boundary is the Blue River.

Ecological Considerations
This tract represents typical upland forest habitat, in addition to a component of bottomland forest, some cedar dominated areas, a couple of acres of open ground, and some young forest habitat where a previous regeneration opening from the last timber sale has resulted in denser and smaller hardwoods currently. Consequently, it likely receives use from a typical assemblage of common game and nongame wildlife species. Hard mast food sources are provided by the oak hickory stand, but another habitat component would come from the cedar stands that retain their evergreen foliage in the winter. These stands provide denser cover for bedding areas, especially during the winter months.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags and legacy trees. Snags are standing dead or nearly dead trees. Snags provide value to a stand in the form of habitat features for foraging activity, den sites, decomposers, bird perching, and bat roosting. Snags eventually contribute to the future pool of downed woody material, which provides habitat for many ground-dwelling species and contributes to healthy soils. Legacy trees are live trees of a certain species and diameter class, that have potential future value to various wildlife species, if retained in the stand

Current assessments indicate the abundance of these habitat features meet or exceed recommended maintenance levels in all diameter classes.

A formal ecological review process, which includes a search of Indiana's Natural Heritage database is part of the management planning process. If Rare, Threatened, or Endangered species or communities were found to be associated with this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the population viability of those species or communities.

Recreation
Being centrally located near the entrance to the property and easily accessible, this tract likely receives a much higher amount of general recreational activity than many of the other tracts on the state forest. The Fox Hollow Horse Trail trailhead starts along the road on the south edge of the neighboring tract 6341901, and the trail traverses this tract along the dual use fire lane to the northwest and west. Since it is near the road and fire tower, this trail likely receives abundant

horse riding use. There is a short spur horse trail (Twin Chimneys Loop) that is also located in the west end of this tract as well. The area is popular with hunters. The Adventure Trail also traverses along the north and west end of this tract, receiving hiking and mountain bike use.

Cultural
Cultural resources may be present, but their location(s) is protected. Adverse impacts to significant cultural resources will be avoided during any activities.

Tract Subdivision Description and Silvicultural Prescription
There are about 2.3 acres of open to semi-open area adjacent to the advanced old field area at the bottom of the hill on the western side of the tract. This is the wildlife opening referenced previously. The other forested components of this tract are subdivided according to stand type (i.e., cover type) and described as follows.

Stand 1: Mixed hardwoods – 117 acres
According to the stand type map, this stand covers about half of the tract. However, only 93 acres is truly mixed mesophytic hardwoods, while two other distinctly different stand types were included into this type. There are two old regeneration openings from the last timber sale that currently contain similar species, but contain no merchantable volume, and these areas totaled 5.1 acres collectively. There is also a sizable old field area in the flat at the bottom of the hill on the west side that has grown back from a former open agricultural use to a mixture of different species with a presence of invasive species, and with half the volume of the true mixed mesophytic hardwood stand. It would best be described as an advanced old field stand, and made up 19 acres in size.

The total volume of the traditional mixed mesophytic stand (9,980 board feet per acre (bd. ft/ac)) is composed primarily of yellow-poplar (2,981 bd. ft/ac), sugar maple (1,489 bd. ft/ac), and Shumard oak (1,127 bd. ft/ac). The remaining 44% of the volume consists of northern red oak, sycamore, chinkapin oak, and various other species. The total volume of the advanced old field portion of this area (4,344 bd. ft/ac) is half that of the previously described traditional mixed mesophytic stand, and is composed primarily of yellow-poplar (2,081 bd. ft/ac), Shumard oak (741 bd. ft/ac), and eastern redcedar (606 bd. ft/ac). The remaining 20% of the volume consists of eastern white pine, northern red oak, black oak, and chinkapin oak. The aforementioned regeneration openings from the last timber harvest currently contain no merchantable volume, but are made up primarily of yellow-poplar, chinkapin oak, sycamore, and black walnut pole sized trees and saplings.

The largest component of this stand contains a volume of 9,980 board feet per acre of which 3,658 was classified as harvestable and 6,322 was classified as residual. A harvest would remove 49 square feet of basal area, which would leave the residual stand with 72 sq. ft. Stocking would drop from 100% to about 60% with the indicated management. The portion more aptly described as advanced old field contains a volume of 4,344 bd. ft/ac of which 803 was classified as harvestable and 3,541 was classified as residual. A harvest would remove 33 square feet of basal area, which would leave the residual stand with 71 sq. ft. Stocking would drop from 90% to 60% with the indicated management. These figures do include cedar as figured according to the cedar log scale.

The desired future condition of this area is a healthy stand of mixed mesophytic species adapted to the site to continue to eventually produce quality wood products when harvesting takes place. To accomplish this, dying, declining, overmature, and/or low-quality trees would be selected for harvest to allow the most vigorous and best quality trees to remain and continue to grow and reseed the area. Openings created from harvesting would allow for the less shade tolerant species to establish a new cohort of seedlings for the future.

Since the last harvest in portions of this stand was 18 years ago, and because it currently contains a high volume of harvestable material, the recommendation would be to rank this stand as a medium to high priority for conducting a harvest. Any timber sale would primarily include this entire stand as well as all of stand 2 with some trees from the other stands. The majority of the harvest volume for the traditional mixed mesophytic portion of stand 1 (3,658 bd. ft/ac) would be contained in yellow-poplar (937 bd. ft/ac), sugar maple (700 bd. ft/ac), sycamore (265 bd. ft/ac), and white ash (236 bd. ft/ac). The remaining 40% would be contained in basswood, northern red oak, chinkapin oak and a variety of other species. The advanced old field portion would have a harvestable volume of 803 bd. ft/ac which would be made up entirely of eastern redcedar and yellow-poplar. A timber sale in this stand would produce a range of between 325,000 to 375,000 board feet total. Most of the stand would probably be harvested under a single-tree selection routine with larger regeneration openings (i.e., patch-cuts) targeting groups of low-grade trees or multiple large trees growing together. When possible, selection should also favor releasing future crop trees.

Post-harvest TSI should be performed to eliminate any residual cull or small pole-sized trees not cut during the harvest, as well as thin where necessary, complete any regeneration openings, and kill grapevines where present. The earlier regeneration openings should receive crop tree release at this time. As always, any ailanthus present should also be treated and eliminated.

Stand 2: Mesic Oak-Hickory – 51.1 acres
This stand covers about a quarter of the tract, and occupies the central ridgetop on the eastern side of the tract that had not been cleared for farming in the past.

The total volume of the stand (7,099 bd. ft/ac) is composed primarily of white oak (3,985 bd. ft/ac), northern red oak (1,014 bd. ft/ac), and black oak (629 bd. ft/ac). The remaining 20% of the volume consists of pignut hickory, shagbark hickory, white ash, and various other species.

It contains a high volume of 7,099 board feet per acre of which 2,422 was classified as harvestable and 4,677 was classified as residual. A harvest would remove 49 square feet of basal area, which would leave the residual stand with 55 sq. ft. per acre. Stocking would drop from 90% to about 50% with the indicated management.

The desired future condition of this area is a healthy stand of predominantly oak and hickory species to continue to produce hard mast food sources for wildlife and eventually quality wood products when harvesting takes place. To accomplish this, dying, declining, overmature, and/or low-quality trees would be selected for harvest to allow the most vigorous and best quality trees to remain and continue to grow and reseed the area. Openings created from harvesting would allow for the less shade tolerant species to establish a new cohort of seedlings for the future.

Retaining shade intolerant tree species (like oak and hickory) while minimizing transition to shade tolerant species (like beech and maple) would be the goal here. Ideally, creating enough regeneration openings and other canopy gaps to allow for establishment and recruitment of oak species into the understory would help achieve these goals.

Since the last harvest in this stand was 18 years ago, and because it also currently contains a moderate amount of harvestable volume and a high amount of residual growing stock, the recommendation would be to rank this stand as a medium to high priority for conducting a harvest. Any timber sale would primarily include this entire stand as well as trees from the other stands in this tract. The majority (70%) of the harvest volume for stand 1 (2,422 bd. ft/ac) would be contained in white oak (1,403 bd. ft/ac), and black oak (288 bd. ft/ac), with white ash, pignut hickory, sugar maple, and various other species making up of the remainder of the harvest volume. A timber sale in this stand would produce a range of between 100,000 to 150,000 board feet total.

Most of the stand would probably be harvested under a single-tree selection routine with larger regeneration openings targeting groups of low-grade trees or multiple large trees growing together. When possible, selection should also favor releasing future crop trees. The residual stand should remain heavy to white oak, with a lesser component of other oak and hickory species, as well as mesophytic species. Application of a prescribed burn primarily in this stand would help to reduce the shade tolerant under and midstories that are taking over most of our forests in the absence of disturbance, and aid in regenerating and recruiting the more fire tolerant oaks and hickories. Burning this tract could be part of the future management, and if implemented, a burn plan would be written to cover the specifics of that process.

Post-harvest TSI should be performed to eliminate any residual cull or small pole-sized trees not cut during the harvest, as well as thin where necessary, complete any regeneration openings, and treat the understory to eliminate shade tolerant species in favor of oaks and other more desirable species. As always, any ailanthus present should also be treated and eliminated.

Stand 3: Dry Oak Hickory – 31.3 acres

This stand covers about a 15% of the tract, and occupies the south facing slopes in the central portion of the tract that had not been cleared for farming in the past. It contains some dry site oak species, but is dominated with eastern redcedar, and would more accurately be described as a rocky south slope with obvious exposed rock ledges and thin soils that restrict tree growth. Consequently, it bears little resemblance to a more traditionally identified oak-hickory stand. This is especially evident in the amount of cedar present and the short stature and small diameters of most of the hardwood trees present, which contributes to its much lower volume per acre than almost all oak-hickory stands.

The total volume of the stand (2,833 bd. ft/ac) is composed primarily of eastern redcedar (1,121 bd. ft/ac), chinkapin oak (583 bd. ft/ac), northern red oak (422 bd. ft/ac), and blue ash (308 bd. ft/ac). The remaining 15% of the volume consists of white oak, Shumard oak, and sugar maple.

It contains a low volume of 2,833 board feet per acre of which 1,437 was classified as harvestable and 1,396 was classified as residual. A harvest would remove 51 square feet of basal

area, which would leave the residual stand with 54 sq. ft. Stocking would drop from 90% to about 45% with the indicated management. These figures do include cedar as figured according to the cedar log scale.

Although many poor sites are a result of past farming and erosion removing much of the soil, this stand was likely always a poor site due to aspect, exposed rock ledges and thin soils. A more frequent historical fire regime likely kept these sites with a more open overstory and mostly free of much of the cedar. The desired future condition of this area is to encourage the hardwood component while reducing the encroaching cedar component to maintain a glade like stand type that has probably been present on these sites since before settlement. To accomplish this, much of the cedar as well as the dying, declining, and/or low-quality trees could be selected for harvest to allow the most vigorous and best quality trees to remain and continue to grow and reseed the area, with an emphasis on reducing the cedar while encouraging the oaks. Retaining shade intolerant tree species (like oak and hickory) while minimizing transition to shade tolerant species (like beech and maple) would be the goal here.

Although harvesting of some trees is recommended in this stand, the presence of exposed rock and the low volume and quality of harvestable trees may make significant harvesting infeasible. Consequently, where this stand intermingles with surrounding stands, some effort would be made to include the more accessible areas with harvesting of those stands, but much of it may remain unmanaged. The majority (75%) of the harvest volume for this stand (1,437 bd. ft/ac) would be contained in eastern redcedar (1,070 bd. ft/ac), with northern red oak, chinkapin oak, and various other species making up of the remainder of the harvest volume. A timber sale in this stand would produce a range of between 30,000 to 50,000 board feet total.

Most of the stand would probably be harvested under a single-tree selection routine. The residual stand would be mostly chinkapin oak, blue ash, and northern red oak with a lesser component of other species. Application of a prescribed burn in this stand combined with the adjacent oak hickory stand would help to reduce the shade tolerant under and midstories that are taking over most of our forests in the absence of disturbance, and aid in regenerating and recruiting the more fire tolerant oaks and hickories. Burning this tract could be part of the future management, and if implemented, a burn plan would be written to cover the specifics of that process.

Stand 4: Bottomland hardwoods – 20.3 acres

This stand covers about 10% of the tract, and occupies the narrow strip immediately adjacent to Fox Hollow drainage and the Blue River. It is distinctly a riparian forest type dominated with wet or moist site species.

The total volume of the stand (11,153 bd. ft/ac) is composed primarily of sycamore (6,913 bd. ft/ac), black walnut (2,029 bd. ft/ac), and Shumard oak (760 bd. ft/ac). The remaining 13% of the volume consists of basswood, silver maple, and various other species.

It contains a high volume of 11,153 board feet per acre of which 2,918 was classified as harvestable and 8,235 was classified as residual. This would remove 47 square feet of basal area, which would leave the residual stand with 76 sq. ft. Stocking would drop from 100% to about 60% with the indicated management.

The desired future condition of this area is a healthy stand of predominantly bottomland hardwoods with emphasis given to encouraging walnut and oaks in the areas not immediately next to the drainages. The areas immediately next to the drainages will continue to be dominated with sycamore and silver maple, and would remain relatively unmanaged as a riparian buffer along those drainages – especially the Blue River. To accomplish this goal, dying, declining, overmature, and/or low-quality trees would be selected for harvest to allow the most vigorous and best quality trees to remain and continue to grow and reseed the area.

Since the last harvest in this stand was 18 years ago, and because it contains a moderate amount of harvestable volume and intermingles with the surrounding stands, some of the area not immediately in the riparian buffer adjacent to the river could be included in any timber sale in the surrounding stands. All of the proposed harvest volume for this stand (2,918 bd. ft/ac) would be contained in sycamore (2,206 bd. ft/ac), Shumard oak (488 bd. ft/ac), and black walnut (224 bd. ft/ac). A timber sale in this stand would produce a range of between 50,000 to 70,000 board feet total.

Most of the stand would probably be harvested under a single-tree selection routine. When possible, selection should also favor releasing future crop trees. The residual stand should remain heavy to sycamore and walnut, with a lesser component of other species.

Post-harvest TSI should be performed to eliminate any residual cull or small pole-sized trees not cut during the harvest, as well as thin where necessary, kill grapevines where present, and treat the understory to eliminate shade tolerant species in favor of walnut, oaks, and other more desirable species. As always, any ailanthus present should also be treated and eliminated.

Stand 5: Conifer – 5.6 acres

This stand is similar to the advanced old field portion of the mixed hardwoods stand described earlier, but contains a higher component of cedar, and was delineated as conifer, though it would best be described as an advanced old field stand. It was once an agricultural field that grew back over time to a mixture of early successional species with a definite cedar component.

The total volume of this stand (4,344 bd. ft/ac) is composed primarily of yellow-poplar (2,081 bd. ft/ac), Shumard oak (741 bd. ft/ac), and eastern redcedar (606 bd. ft/ac). The remaining 20% of the volume consists of eastern white pine, northern red oak, black oak, and chinkapin oak.

This stand contains a volume of 4,344 board feet per acre of which 803 was classified as harvestable and 3,541 was classified as residual. A harvest would remove 33 square feet/acre of basal area, which would leave the residual stand with 71 sq. ft./acre. Stocking would drop from 90% to 60% with the indicated management. These figures DO include cedar as figured according to the cedar log scale. A timber sale in this stand would produce about 5,000 board feet total – all of it being eastern redcedar and yellow-poplar.

The desired future condition of this area would be a growing stand of hardwoods mostly free of cedar competition. Consequently, most of the cedar was tallied for removal from this relatively small are of recovering old field.

Since this stand is surrounded by the more merchantable mixed hardwood stands, there would likely be some trees included from here along with any timber sale taking place in the other stands. Timber harvest and post-harvest TSI should concentrate on releasing any oak regeneration – mostly with follow-up TSI. As always, any ailanthus present should also be treated and eliminated.

The current forest resource inventory was completed in June 2022 by Wayne Werne. A summary of the estimated tract inventory results is in the table below.

Tract Summary Data (trees >11"DBH):

Species	# Sawtimber Trees	Total Bd. Ft.
American beech	51	13,030
American elm	7	2,690
Basswood	160	37.690
Bitternut hickory	75	19,710
Black cherry	102	16,920
Blackgum	23	7,640
Black oak	163	38,150
Black walnut	231	60,940
Blue ash	130	14,610
Chinkapin oak	467	81,260
Eastern redcedar	1056	51,880
Eastern white pine	21	7,810
Hackberry	101	15,890
Northern red oak	561	148,450
Ohio buckeye	154	18,830
Pignut hickory	123	24,560
Red elm	28	1,160
Shagbark hickory	204	34,050
Shumard oak	457	137,200
Silver maple	23	6,290
Sugar maple	1048	148,650
Sycamore	422	209,920
White ash	242	39,400
White oak	832	208,160
Yellow-poplar	1274	328,670
Total:	7955	1,673,570

Summary Tract Silvicultural Prescription and Proposed Activities

Since the last harvest in this stand was 18 years ago, and because it also currently contains a moderate amount of harvestable material and residual growing stock, the recommendation would be to rank this stand as a medium to high priority for conducting a harvest. Due to the current condition of the stand, an improvement harvest is recommended and could be undertaken as early as this year, or the near future. Overall tract volume would be reduced by about a third. A marked sale in this tract would produce an approximate total volume of between 500,000 to 650,000 board feet.

Utilizing numbers from the last inventory in 2003, this tract has shown a growth rate of approximately 120-135 board feet per acre per year over the last 19 years after taking into account the volume removed in the 2005 and 2006 harvests, which is somewhat low compared to calculated growth rates on other tracts of the forest. This site seems to have productive soils and growth potential, so this lower growth rate could be due to mortality of the ash, or it could be an aberration of the sampling point placement between inventories. With the application of the proposed management, this tract should exhibit high and potentially greater growth and productivity by favoring the healthiest and best quality trees for a residual stand, while removing the declining trees.

Most of the tract would probably be harvested under a single-tree selection routine with larger regeneration openings targeting groups of low-grade trees or multiple large trees growing together. When possible, selection should also favor releasing future crop trees. The residual stand should continue to be dominated with yellow-poplar, sycamore, white oak, and northern red oak with a multitude of other species as well. Application of a prescribed burn would help to reduce the shade tolerant under and midstories that are taking over most of our forests in the absence of disturbance, and aid in regenerating and recruiting the more fire tolerant oaks and hickories where the sites are suited for them. Burning this tract could be part of the future management, and if implemented, a burn plan would be written to cover the specifics of that process.

Post-harvest TSI should be performed to eliminate any residual cull or small pole-sized trees not cut during the harvest, as well as thin where necessary, complete any regeneration openings, and treat the understory to eliminate shade tolerant species in favor of oaks and other more desirable species. As always, any ailanthus present should also be treated and eliminated.

Due to the proximity and similar stand types, this harvest should occur at the same time as adjacent tract 6341901, which is how previous sales occurred. This would minimize time spent during management activities to ensure the least effect on recreation, wildlife, hydrology, and other concerns mentioned in this plan.

Management activities will not intentionally remove snags, with a few exceptions of large recently dead trees or storm damage when possible, so the timber sale will not negatively impact that component significantly. Creation of more snags in this size class could be undertaken by girdling large cull trees in a post-harvest TSI operation.

Additionally, management activities involving a timber sale should not affect this habitat long-term from the perspective of any wildlife utilizing it due to the maintenance of a forested habitat on the tract. Creation of regeneration openings will create early successional habitat that will be beneficial to certain groups of wildlife dependent upon this habitat. Likely, early successional habitat created with such management will also benefit a wider segment of wildlife species that preferentially utilize such habitat for feeding and cover more so than later successional stage habitat.

The habitat on this tract in the context of the surrounding landscape does not represent any

special component that would be used more preferentially or exclusively by wildlife for traveling or dispersion, as forest in a non-forested landscape might be. The Blue River provides a unique riparian corridor along a perennial stream that would be preferentially utilized by many types of wildlife as a reliable water source, but implementation of a riparian buffer with limited management would help protect that corridor as habitat. The small pond found nearby on the neighboring tract would also provide a valuable water source for wildlife during dry periods, and also represent good habitat for reptiles and especially amphibians.

Since this tract represents a component of contiguous forest, it is possible that forest management activities might disrupt any forest interior species by creating edge habitat for generalist species to "invade" the area. This would possibly occur if regeneration openings were put in place that offered a habitat preferred by such generalist species which might move in and start using such habitat. In the context of the surrounding landscape, this tract represents a moderate chunk of forest in a matrix of surrounding forest land.

BMPs will be followed throughout the harvest to ensure any management activities impact to soils is limited. Soil disturbance will largely be confined to the log yard and main skid trails. The BMPs will also ensure water quality is not permanently affected, and implementation of these BMPs will be contractually required of loggers.

Snags and coarse woody debris will remain at viable levels for wildlife after harvest and the harvest will not adversely affect the wildlife.

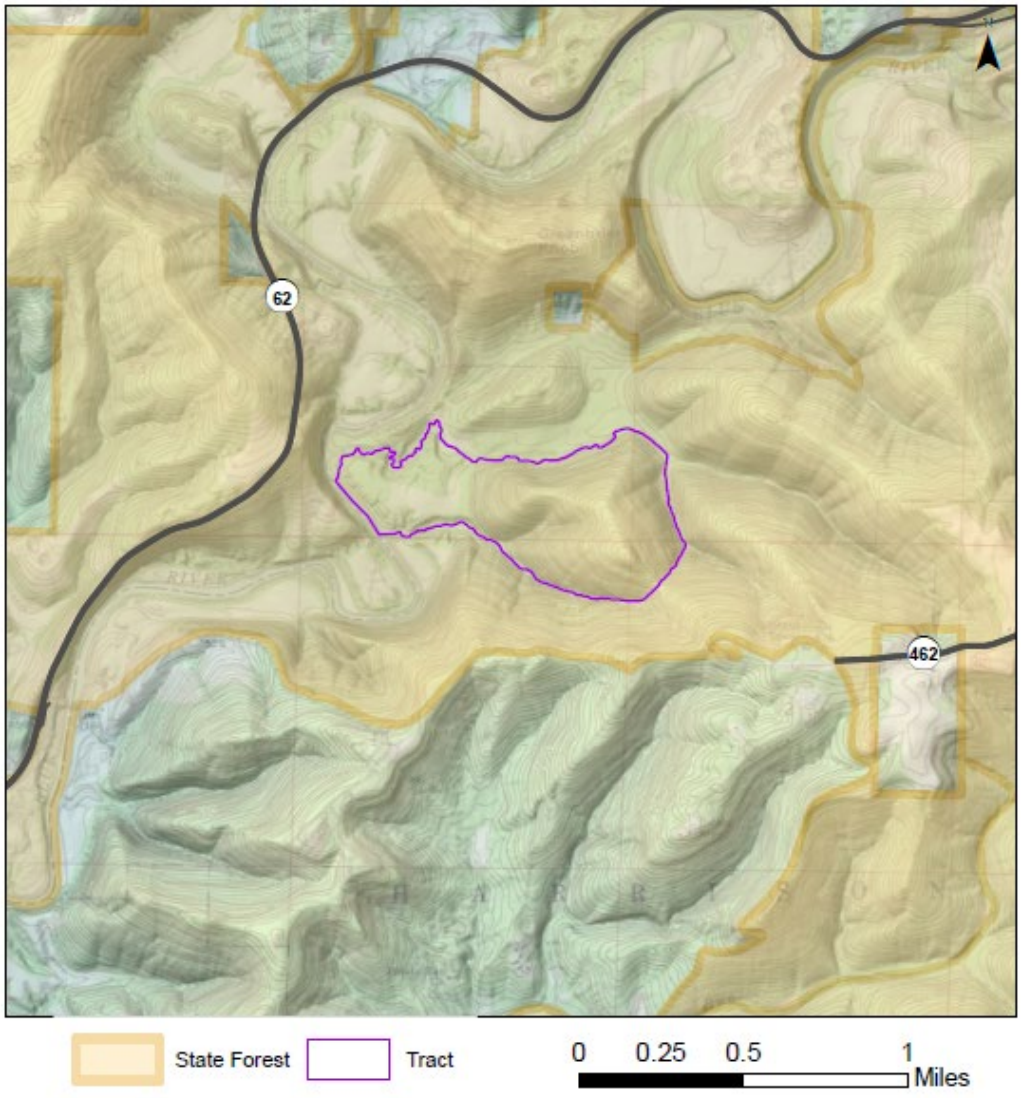
During the harvest, part of the horse trails would have to be temporarily closed for public safety. However, under current restrictions, this closure would only occur from November 16th to April 1st and would not affect most of the spring, summer, and fall recreation. Hunting opportunities should be improved by the maintenance of early successional habitat and the recruitment of hard mast producers such as oak and hickory which provide food sources for a wide variety of native wildlife.

Once the harvest is complete, post-harvest TSI should be conducted and then the stand should be revisited for regeneration opening and post-harvest checks in 3-5 years to ensure proper regeneration and growth is occurring. In about 20 years, the stand should be revisited for another inventory and a new management guide can be created.

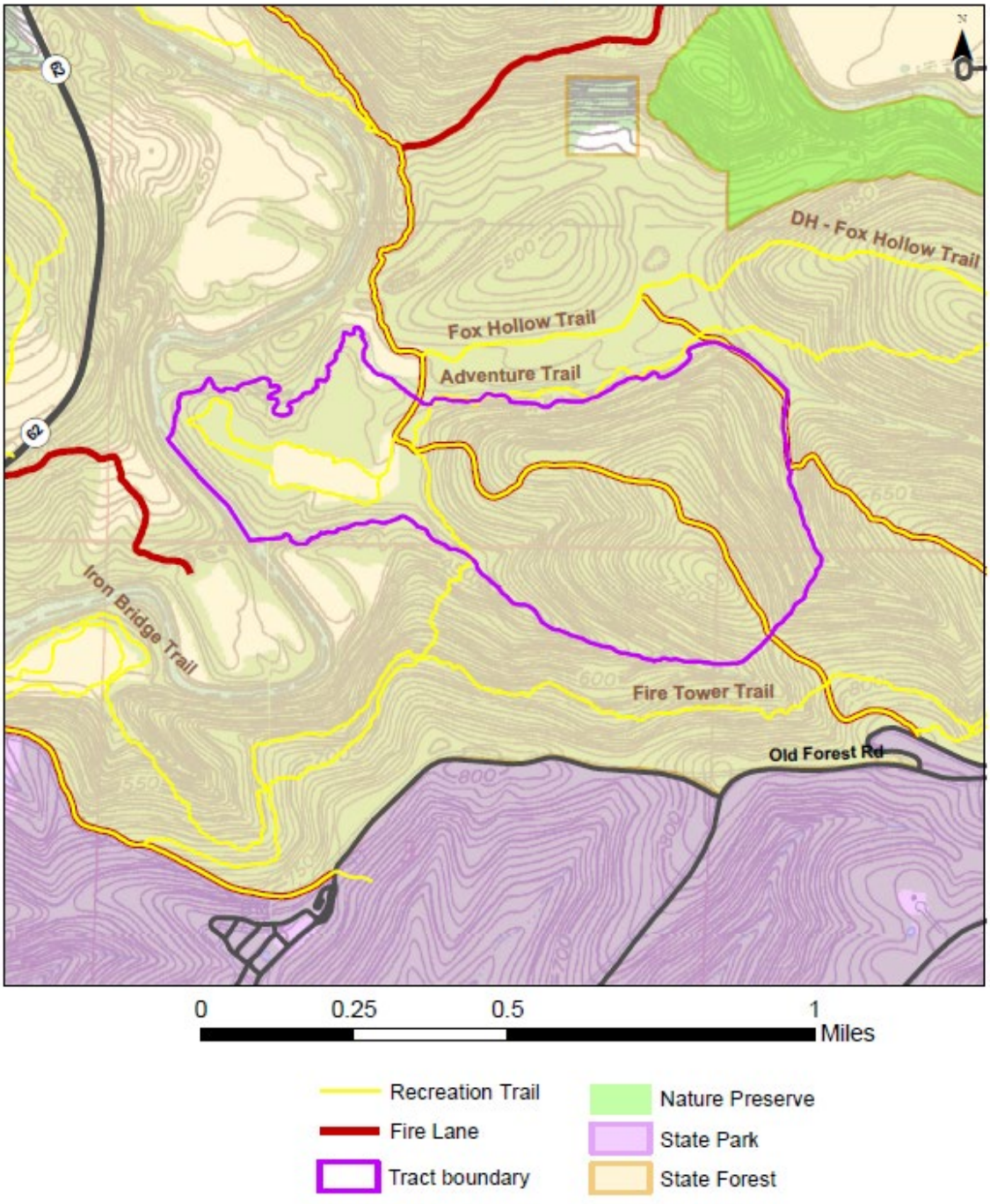
Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Mark Harvest	2025-2026
Sell Timber	2025-2026
Possible prescribed burn	2025-2026
Post-harvest TSI	2027-2028
3-year regeneration opening review	Three years after harvest
Next forest inventory	2042

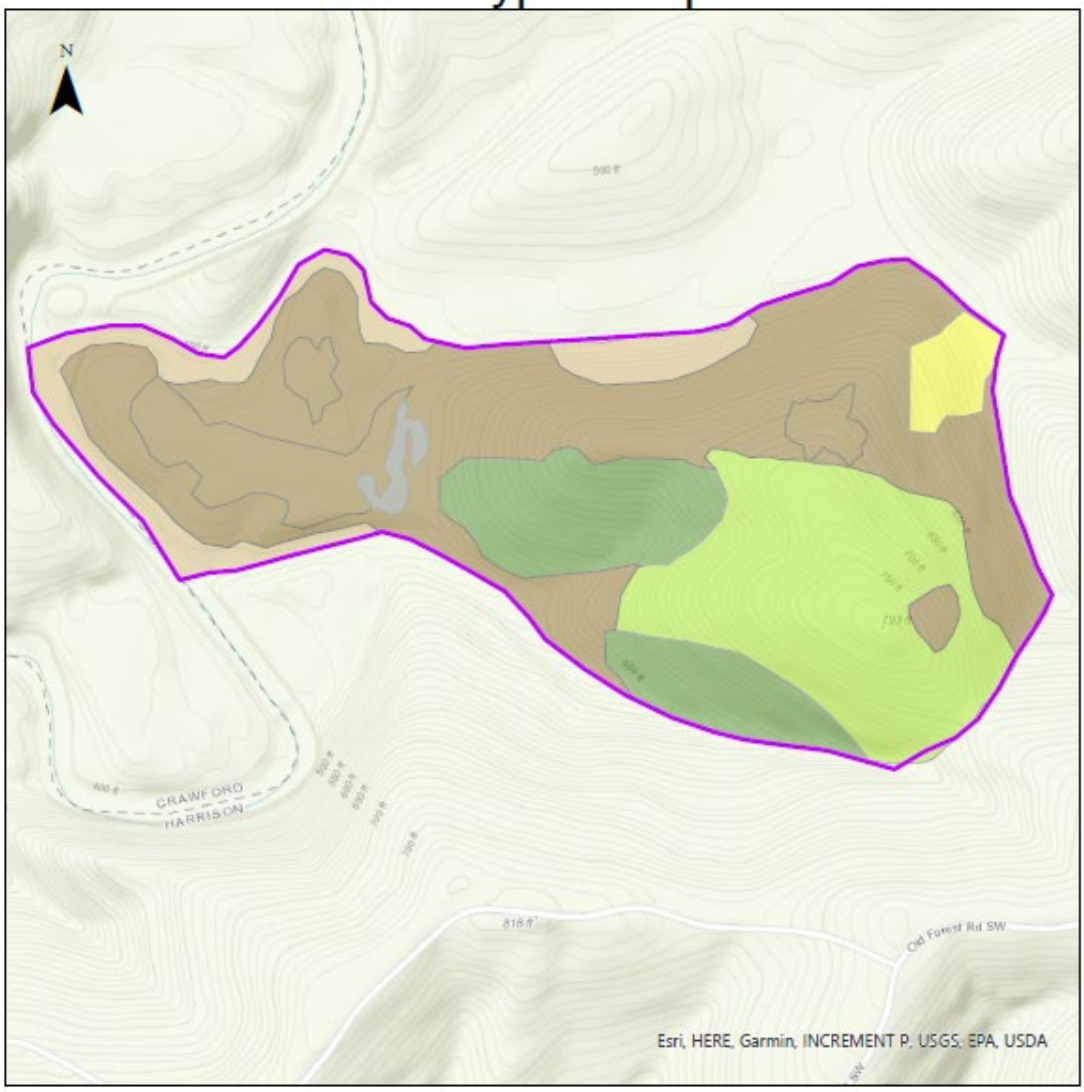
Harrison-Crawford State Forest
Location Map
Compartment 19 Tract 3



Harrison-Crawford State Forest
Compartment 19 Tract 3
Tract Map



Harrison-Crawford State Forest
Compartment 19 Tract 3
Cover Types Map



Harrison Crawford State Forest | Compartment: 20 | Tract: 05
Forester: Daniel Martin | Date: 5/14/2024 | Acres: 92
Management Cycle End Year 2044 | Management Cycle Length 20 years

Location
Tract 05, also known as 6342005, is primarily in Section 35, T3S, R2E with a northern section in Section 26, T3S, R2E, in Harrison County, Indiana. The tract is approximately 6.5 miles west of Corydon, Indiana. It can be accessed from a fire lane off State Road 462

General Description
This tract is fully forested and consists of 3 cover types; a nature preserve, mesic oak-hickory and mixed hardwoods. It consists of a slope which leads to the Blue River. The flat area at the top of the hill constitutes the eastern boundary of the tract.

History

- 1940 140 acres purchased from Rothrock, 22 of those acres constitutes the southeastern portion.
- 1968 167 acres purchased from Smoots, 13 acres constitutes the eastern portion.
- 1972 266 acres purchased from Hanson, 47 of those acres constitute the largest northern portion.
- 1978 2.6 acres purchased from Lewis, 0.6 of those acres constitutes a small western corner.
- 1993 Forest inventory completed, and management guide written by Matt Fallon.
    - Total basal area /acre – 93
    - Total BDFT /Acre – 4,820
    - Total BDFT – 306,044
    - Top 5 species by volume

Species	BDFT
Pignut Hickory	67,035
White Oak	53,511
White Ash	39,459
Northern Red Oak	30,667
Yellow Poplar	29,838

- 1995 Timber sale conducted along with tracts 6342004 & 6342005 by Dwayne Sieg and Dan Shaver.
    - Number of trees – 936
    - Number of culls – 251
    - Total volume sold – 184,761
    - Top 5 species by volume

Species	BDFT
Northern Red Oak	45,984
White ash	41,118
Black Oak	34,775

White Oak	32,453
Sugar Maple	10,879

- 1999 264 acres purchased from The Nature Conservancy, 10 of those acres constitute the remaining western area.
- 2017 The Greenbrier Knob Nature Preserve was designated

Landscape Context
The surrounding landscape is primarily managed forests owned and managed by the Indiana Department of Natural Resources (IDNR). Located in the western and southern portions of this tract there is the Greenbrier Knob Nature Preserve that is owned by Harrison Crawford State Forest and jointly managed by IDNR Division of Forestry and IDNR Division of Nature Preserves. About a mile southwest of the tract boundary is O'Bannon Woods State Park. There are private residences less than ½ mile east of the tract and also private farmland about a mile east of the tract boundary.

Topography, Geology and Hydrology
This tract consists of a northwestern facing slope which eventually turns into limestone cliffs leading to the Blue River. The southern boundary of this tract consists of an unnamed mapped stream which drains to the Blue River. Located in the tract are various karst features which will be buffered according to the 2022 Best Management Practices (BMP) Field Guide.

Soils
There are eight (8) unique soil types in this tract.

24 acres of Caneyville-Haggatt-Knobcreek silt loams, karst, hilly, eroded.
22 acres of Brussels-Rock outcrop complex, 35 to 90 percent slopes, rubbly.
20 acres of Caneyville-Rock outcrop complex, 25 to 60 percent slopes.
11 acres of Ebal-Gilpin-Wellston silt loams, 10 to 22 percent slopes, eroded.
5 acres of Deuchars-Apalona-Wellston silt loams, 6 to 12 percent slopes, eroded.
5 acres of Caneyville-Haggatt-Knobcreek complex, karst, hilly, severely eroded.
3 acres of Gilpin-Tipsaw-Ebal complex, 18 to 35 percent slopes, stony.
2 acres of Knobcreek-Haggatt-Caneyville silt loams, karst, rolling, eroded.

Access
A gated gravel fire lane from S.R. 462 provides access to the tract. Sections of the Upper Blue River Horse Trail will overlap with this fire lane going to the tract and within the tract. Additional gravel may be warranted depending on the nature of the management activity.

Boundary
All tract borders are interior to the state and defined by natural features (e.g., drain ravines, streams, trails, etc.). The boundary located within the tract to the nature preserve is delineated by the fire lane located within the tract.

Ecological Considerations
The oak-hickory cover type in this tract will provide a hard mast food supply for various wildlife

and the nature preserve located within the tract is protected partly because of the unique limestone cliffs.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags and legacy trees. Snags are standing dead or dying trees. Snags provide value to a stand in the form of habitat features for foraging activity, den sites, decomposers, bird perching, and bat roosting. Snags eventually contribute to the future pool of downed woody material. Downed woody debris provides habitat for many species and contributes to healthy soils. Legacy trees are live trees of a certain species and diameter class, that have potential future value to various wildlife species, if retained in the stand.

In the compartment that includes this tract, inventory data indicate snag densities exceed Division of Forestry targets in all size classes, including "optimal" targets. Additionally, where there was a sufficient sample size for estimation, legacy tree densities exceed compartment-level targets.

There are various invasive species present such as ailanthus and Japanese stilt grass. Pre- and post-harvest invasive control should take place to remove or minimize the effect of these species. There may be other invasive species present that were not seen during inventory, those should be treated as well.

A formal Ecological Review process, which includes a search of Indiana's Natural Heritage Database, is part of the management planning process. If Rare, Threatened or Endangered species were found to be associated with this area, the activities prescribed in this guide will be conducted in a manner that will not threaten population viability of those species.

Recreation
Throughout the center of the tract there are portions of the Adventure Trail and portions of the Upper Blue River Horse Trail. The Upper Blue River Horse Trail also reenters the tract in the northern tip. During management activities in this tract, portions of the trails within the tract will be temporarily closed or re-routed for public safety. They will reopen following the management activity.

Cultural
Cultural resources may be present, but their location(s) is protected. Adverse impacts to significant cultural resources will be avoided during any activities.

Tract Subdivision Description and Silvicultural Prescription
There are three unique cover types located in this tract consisting of mesic oak-hickory, mixed hardwoods, and a nature preserve. The three stands have varying degrees of maturity and harvest history.

Throughout the tract, group selection or patch-cut openings may be applied to certain areas for multiple reasons, such as the overstory suffering from mortality, vigorous natural regeneration, or poor-quality trees. These openings will provide early seral habitat in addition to the release of

the desired trees. 5-15% of the whole tract would have these openings as they would have to be large enough to achieve the desired effect of both habitat and regeneration with adequate sunlight for long enough to allow regenerating trees to become part of the canopy.

For multiple reasons low quality or understory trees may not be cut during the harvest. A post-harvest timber stand improvement (TSI) would help reduce poor quality or competing trees and favor oak or the desired species to not alter the composition of the cover type.

TSI can include cutting, girdling, and herbicide application to low value trees as well as potentially prescribed fire. If a prescribed burn is planned in this area, a burn plan will be written and followed, this includes burning during the dormant season and in accordance with all prescribed fire guidelines. During the post-harvest TSI any invasive species, if not already treated prior to harvest, can also be removed.

The current forest resource inventory was completed on 5/14/24 by forester Daniel Martin. A summary of the estimated tract inventory results are located in the tables below.

Tract Summary Data (Trees > 11" DBH)

Category	Estimate
Tract Acres (Forested)	92
Gingrich Stocking Percent (%)	78
Trees Per Acre	122
Basal Area Per Acre (SQFT)	92
Volume Per Acre (BDFT)	6,920

Tract Summary Data (trees >11”DBH):

Species	# of Trees	Total Bdft
American beech	9	5,160
American Sycamore	34	6,840
Black Gum	56	4,970
Black Oak	69	29,890
Black Walnut	9	2,180
Chestnut Oak	6	6,370
Chinkapin Oak	256	38,920
Eastern Red cedar	1,168	49,200
Northern Red Oak	164	40,560
Pignut Hickory	481	88,580
Shagbark Hickory	239	42,930
Shingle Oak	24	2,680
Sugar Maple	882	60,240
White Oak	947	222,110
Yellow Poplar	283	36,220
Total:	4,627	636,850

Stand 1: Nature Preserve – 39 acres.
The Greenbrier Knob Nature Preserve consists of 144 acres, 37 of which are in 6342005. Two acres of water are accounted for within this stand. This nature preserve contains limestone cliffs, Blue River gravel wash and rare plants among other unique features. The Greenbrier Knob Nature Preserve is also considered a high conservation value forest. The nature preserve will be avoided during any management activity outlined in this management guide. Management within the nature preserve is administered by the IDNR Division of Nature Preserves.

Stand 2: Mesic Oak-Hickory – 35 acres.
This cover type is fully stocked. White oak is most of the volume in this stand making up 45% of the stand total. The next most abundant species is pignut hickory which accounts for 21% of the volume in this stand. The mortality of white ash and black oak were noted throughout the stand.

The objective of this cover type is to provide multiple economic and ecological services specifically a quality hardwood timber stand, dominated by oak and hickory, while providing hard mast and early to mid-seral habitat for wildlife.

Given the current stand conditions and stocking level an improvement harvest would thin the stand, capture mortality of dying trees, remove low quality trees, release crop trees, and to release advanced natural oak regeneration in the understory wherever it may occur. If a harvest were conducted the composition of the site would remain the same with the majority of the volume being in white oaks. However, many declining ash trees would be removed from the overstory. Some ash trees did not show signs of decline and those exhibiting potential resistance may be retained in the tract.

In areas with particularly vigorous oak regeneration or inadequate quality overstory group selection or patch-cut opening may be applied. These openings will provide early seral habitat in addition to the release of the desired trees.

Stand 3: Mixed Hardwoods – 18 acres.
This cover type is fully stocked with yellow-poplar making up 36% of the volume and eastern red cedar is the second most abundant species consisting of 16% of the volume in the stand. This tract consisted mainly of poor growth form or hollow hardwoods with cedar invading.

Given the current stand conditions and stocking level an improvement harvest would thin the stand, capture mortality of dying trees, remove low quality trees, release crop trees, and to release advanced natural regeneration in the understory wherever it may occur. If a harvest were conducted the composition of the site would remain the same with much of the volume being in yellow-poplar, although cedar would probably be largely reduced from the overstory.

Summary Tract Silvicultural Prescription and Proposed Activities
Due to the current stocking and overall condition of the tract an improvement harvest is recommended and could be started as early as this year or 2025. Overall, the tract volume would be reduced 20-40%. This would largely be done by single-tree and group selection. Some patch-cut openings may occur where openings would be beneficial to the stand. TSI would be recommended both before and after the harvest to pretreat invasives present and then return to

the tract to remove unmerchantable trees and continue removing any invasives. Due to the proximity and similar stand types, this harvest could occur at the same time as 6342006 and 6342007. This would minimize time spent during management activities to ensure the least effect on recreation, wildlife, hydrology, and other concerns mentioned in this plan.

This harvest will largely not change the composition of the tract. The forested areas will remain forested retaining the current dominant species present.

During the harvest, part of the Upper Blue River Horse Trail and a portion of the Adventure Trail would be temporarily closed for public safety. However, under current restrictions, cutting would only occur from November 16th to April 1st and the remaining activities needed to reopen the trails would likely be completed soon after. Therefore, the trail closures and reroutes would not affect most of the spring, summer and fall recreation. Hunting opportunities should be improved by the maintenance of early successional habitat and the recruitment of hard mast producers such as oak and hickory to provide deer and small mammal browse.

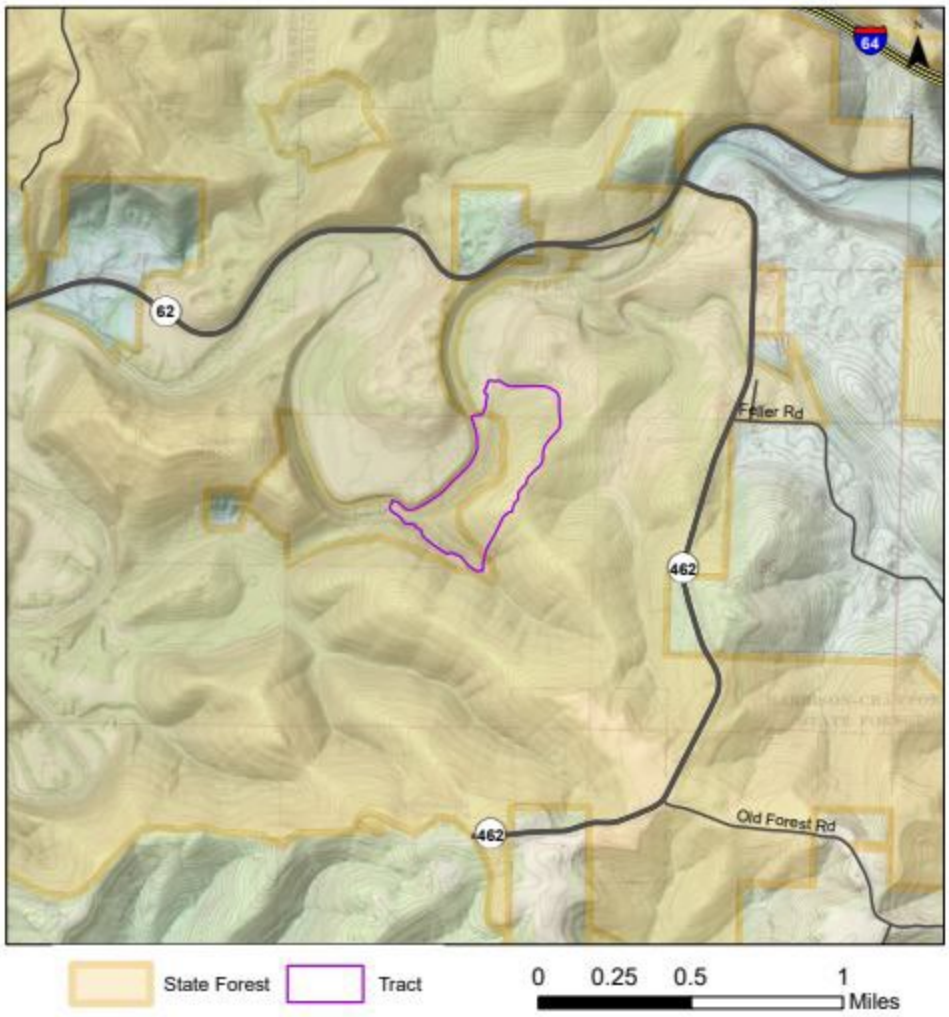
BMPs will be followed throughout the harvest to ensure any management activities impact to soils is limited. Soil disturbance will largely be confined to the log yard and main skid trails. The BMPs will also ensure water quality is not permanently affected. The following of these BMPs will be contractually required of management operators.

Once the harvest is complete post-harvest TSI should be conducted and then the stand should be revisited for regeneration opening and post-harvest checks within 3 years to ensure proper regeneration and growth is occurring. In about 20 years the stand should be revisited for another inventory and a new management guide can be created.

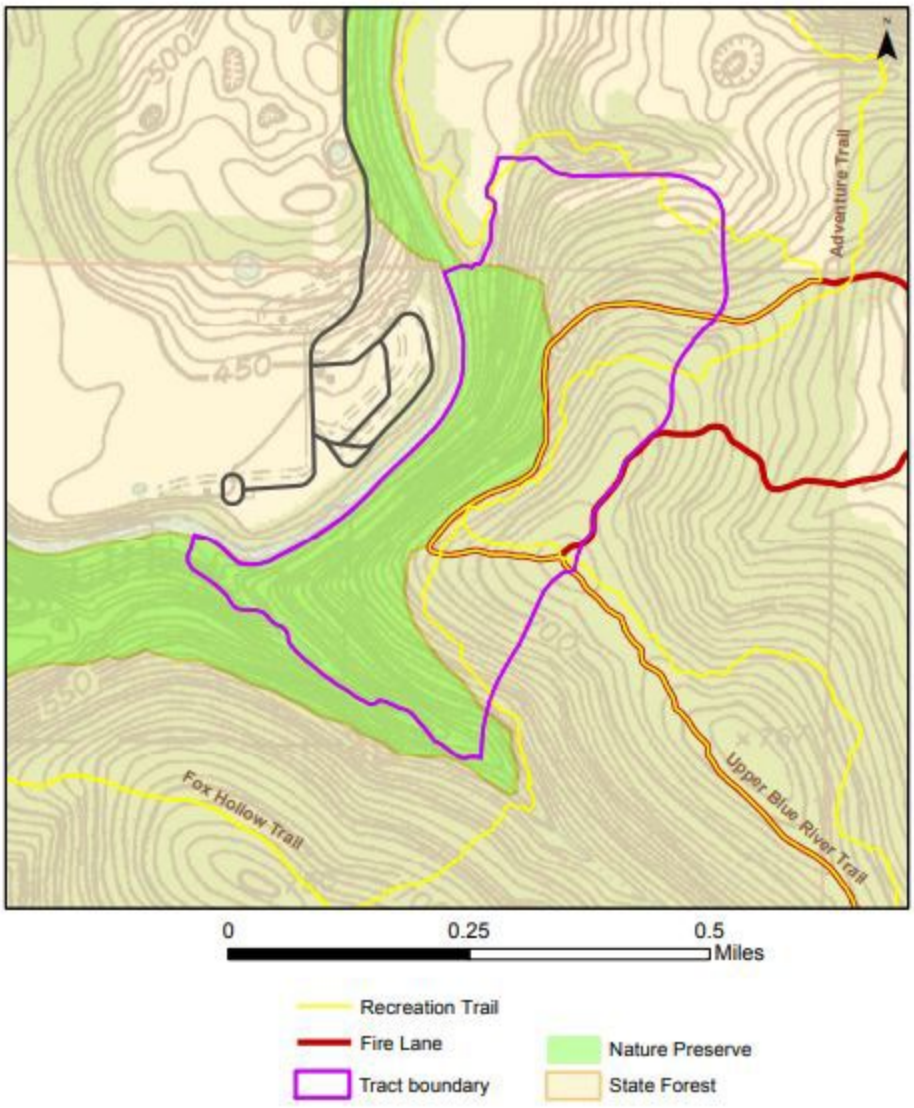
Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Fire lane maintenance	2024-2026
Pre-harvest TSI and invasive treatments	2024-2026
Mark harvest	2025-2027
Sell timber	2025-2027
Post-harvest TSI and invasive treatments	One to two years after harvest
3-year regeneration opening review	Three years after harvest
Next forest inventory	2044

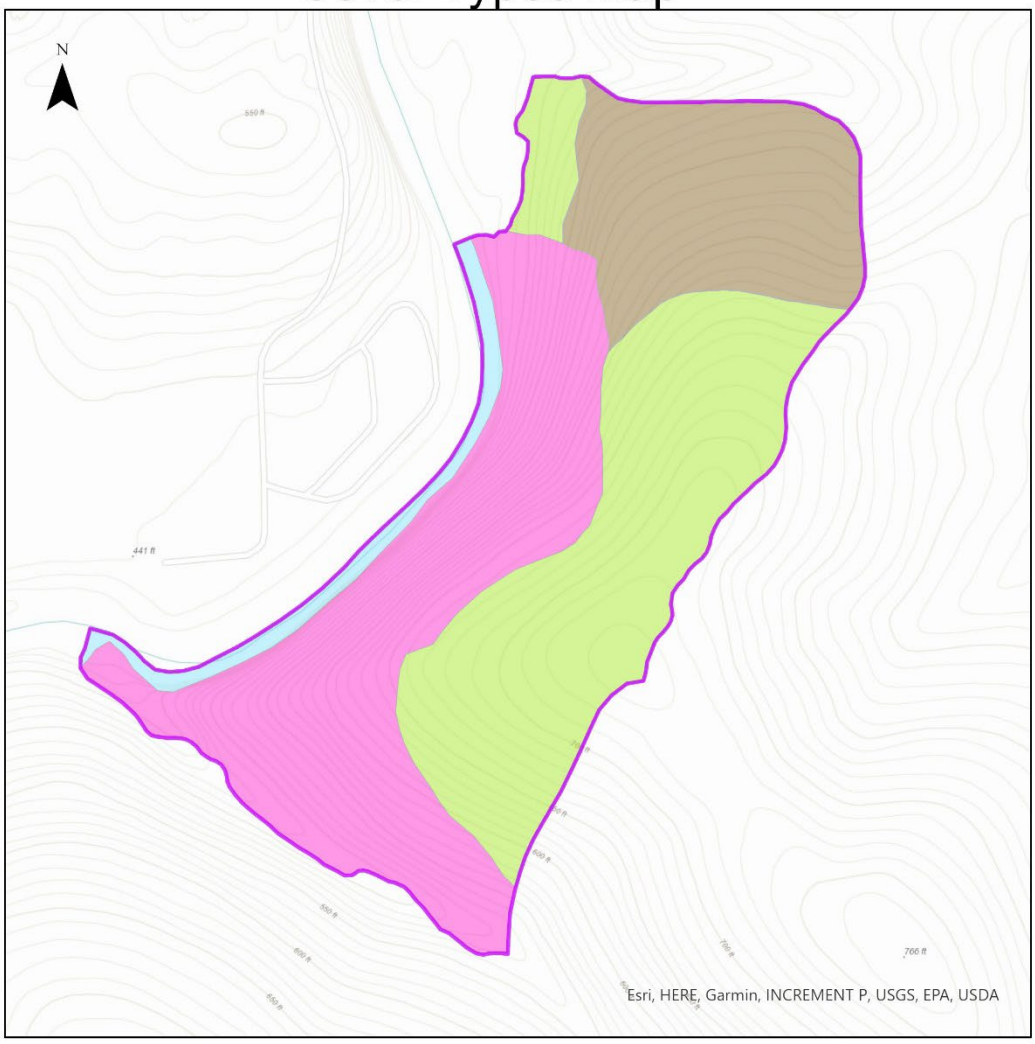
Harrison-Crawford State Forest
Location Map
Compartment 20 Tract 5



Harrison-Crawford State Forest
Compartment 20 Tract 5
Tract Map



Harrison-Crawford State Forest
Compartment 20 Tract 5
Cover Types Map



Harrison Crawford State Forest | Compartment: 20 | Tract: 06
Forester: Daniel Martin | Date: 6/10/2024 | Acres: 121
Management Cycle End Year: 2044 | Management Cycle Length: 20 years

Location
Tract 06, also known as 6342006, is primarily in Section 35, T3S, R2E with a northern section in Section 26, T3S, R2E, in Harrison County, Indiana, approximately 6.5 miles west of Corydon, Indiana. It can be accessed from a fire lane off State Road 462

General Description
This tract is on a slope with the flat area at the top of the hill being the tract boundary to the north and west and a drainage being the tract boundary to the south and east. The entire tract is forested consisting of mesic oak-hickory, mixed hardwoods and planted pine with most of the acreage being mesic oak-hickory.

History

- 1934 120 acres purchased from Mackintosh, 24 acres from that purchase constitutes the southern portion of the tract.
- 1940 140 acres purchased from Rothrock, 27 acres from that purchase constitutes the western portion of the tract.
- 1968 167 acre purchased from Smoots, 70 acres from that purchase constitutes the final northern portion of the tract.
- 1993 Forest inventory conducted by Matt Fallon.
    - Total basal area /acre – 81.9
    - Total board feet (BDFT) /Acre – 5,356
    - Total BDFT – 603,636
    - Top 5 species by volume

Species	BDFT
White Oak	114,165
Yellow Poplar	75,954
Pignut Hickory	65,639
Black Oak	63,063
Northern Red Oak	60,749

- 1994 Timber sale conducted along with tracts 6342004 & 6342005 by Dwayne Sieg and Dan Shaver.
    - Number of trees – 936
    - Number of culls – 251
    - Total volume sold – 184,761
    - Top 5 species by volume

Species	BDFT
Northern Red Oak	45,984
White ash	41,118
Black Oak	34,775
White Oak	32,453

Sugar Maple	10,879

- 2013 Forest inventory completed by John Segari.
  - Total basal area /acre – 118
  - Total BDFT /Acre – 6,849
  - Total BDFT – 808,140
  - Top 5 species by volume

Species	BDFT
White Oak	153,950
Northern Red Oak	104,960
Black Oak	101,390
Eastern Red Cedar	66,390
Sugar Maple	57,610

Landscape Context
The surrounding landscape is primarily managed forests owned and managed by the Indiana Department of Natural Resources (IDNR). In neighboring tracts there is the Greenbrier Nature Preserve and about a mile southwest of the tract boundary is O'Bannon Woods State Park. These are primarily owned or managed by IDNR divisions other than the Division of Forestry. There are private residences less than ½ mile east of the tract and also private farmland about a mile east of the tract boundary.

Topography, Geology and Hydrology
This tract is on an eastern facing slope that goes down to an unnamed mapped stream which drains into Rock Creek. Located in the tract are various karst features which will be buffered according to the 2022 Best Management Practices (BMP) Field Guide.

Soils
There are seven (7) unique soil types in this tract.

48 acres of Caneyville-Haggatt-Knobcreek complex, karst, hilly, severely eroded.
21 acres of Ebal-Gilpin-Wellston silt loams, 10 to 22 percent slopes, eroded.
14 acres of Gilpin-Tipsaw-Ebal complex, 18 to 35 percent slopes, stony.
13 acres of Caneyville-Haggatt-Knobcreek silt loams, karst, hilly, eroded.
13 acres of Deuchars-Apalona-Wellston silt loams, 6 to 12 percent slopes, eroded.
10 acres of Ebal-Gilpin-Wellston silt loams, 10 to 22 percent slopes, severely eroded.
2 acres of Haymond silt loam, depression, 0 to 2 percent slopes, frequently ponded, very brief duration.

Access
A gated gravel fire lane from S.R. 462 provides access to the tract. Sections of the Upper Blue River Horse Trail will overlap with this fire lane going to the tract and within the tract. Additional gravel may be warranted depending on the nature of the management activity.

Boundary
All tract borders are interior to the state and defined by natural features (e.g., drain ravines,

streams, trails, etc.).

Ecological Considerations
Most of this tract consists of an oak-hickory cover type which will provide hard mast food supply for various wildlife. The conifer stand located in the tract may also provide thermal cover for wildlife. There is also an abundance of snags throughout the tract which can provide habitat for a plethora of wildlife species. During the inventory signs or wildlife observed included eastern box turtles (*Terrapene carolina*), white tailed deer (*Odocoileus virginianus*) and eastern wild turkey (*Meleagris gallopavo*).

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags and legacy trees. Snags are standing dead or dying trees. Snags provide value to a stand in the form of habitat features for foraging activity, den sites, decomposers, bird perching, and bat roosting. Snags eventually contribute to the future pool of downed woody material. Downed woody debris provides habitat for many species and contributes to healthy soils. Legacy trees are live trees of a certain species and diameter class, that have potential future value to various wildlife species, if retained in the stand.

In the compartment that includes this tract, inventory data indicate snag densities exceed Division of Forestry targets in all size classes, including "optimal" targets. Additionally, where there was a sufficient sample size for estimation, legacy tree densities exceed compartment-level targets.

There are various invasive species present such as ailanthus and Japanese stilt grass. Pre- and post-harvest invasive species control should take place to remove or minimize the effect of these species. There may be other invasive species present that were not seen during inventory that should be treated as well.

A formal Ecological Review process, which includes a search of Indiana's Natural Heritage Database, is part of the management planning process. If Rare, Threatened or Endangered species were found to be associated with this area, the activities prescribed in this guide will be conducted in a manner that will not threaten population viability of those species.

Recreation
Throughout the tract there are portions of the Adventure Trail and portions of the Upper Blue River Horse Trail. During the inventory deer stands and cameras were observed so hunting is expected to be occurring in the tract. During management activities in this tract, portions of the trails within the tract will be temporarily closed or re-routed for public safety. They will reopen following the management activity.

Cultural
Cultural resources may be present, but their location(s) is protected. Adverse impacts to significant cultural resources will be avoided during any activities.

Tract Subdivision Description and Silvicultural Prescription

There are 3 unique cover types located in this tract consisting of mesic oak-hickory, mixed hardwoods, and conifer. These stands have varying degrees of maturity and harvest history, with certain areas not receiving management during previous timber harvests.

Throughout the tract group selection or patch-cut openings may be applied to certain areas for multiple reasons, such as the overstory suffering from mortality, vigorous natural regeneration, or poor-quality trees. These openings will provide early seral habitat in addition to the release of the desired trees. 5-15% of the whole tract would have these openings as they would have to be large enough to achieve the desired effect of both habitat and regeneration with adequate sunlight for long enough to allow regenerating trees to become part of the canopy.

For multiple reasons low quality or understory trees may not be cut during the harvest. A post-harvest timber stand improvement (TSI) would help reduce poor quality or competing trees and favor oak or the desired species to not alter the composition of the cover type.

TSI can include cutting, girdling, and herbicide application to low value trees as well as potentially prescribed fire. If a prescribed burn is planned in this area, a burn plan will be written and followed, this includes burning during the dormant season and in accordance with all prescribed fire guidelines. During the post-harvest TSI any invasive species, if not already treated prior to harvest, can also be removed.

The current forest resource inventory was completed on 6/10/24 by forester Daniel Martin. A summary of the estimated tract inventory results are located in the tables below.

Tract Summary Data (Trees > 11" DBH)

Category	Estimate
Tract Acres (Forested)	121
Gingrich Stocking Percent (%)	100
Trees Per Acre	141
Basal Area Per Acre (SQFT)	124
Volume Per Acre (BDFT)	10,153

Tract Summary Data (trees >11"DBH):

Species	# of Trees	Total Bdft
Yellow Poplar	904	204,000
White Oak	574	173,860
Sugar Maple	1995	143,740
Eastern White Pine	680	129,720
Black Oak	470	118,450
Pignut Hickory	460	88,480
Shortleaf Pine	639	83,170
Eastern Red cedar	1587	82,340
Northern Red Oak	264	71,350
Shagbark Hickory	234	41,310
White Ash	103	12,960
Black Walnut	115	12,680
Chinkapin Oak	111	10,750
Mockernut Hickory	43	8,610
Virginia Pine	55	8,300
Black Cherry	54	8,000
American beech	64	6,470
Red Maple	66	5,670
American Sycamore	6	3,330
Black Gum	16	2,030
Red Elm	21	840
Total:	8,461	1,216,060

Stand 1: Mesic Oak-Hickory – 72 acres.
This cover type makes up most of the tract acreage and is fully stocked. White oak is most of the volume in this stand making up 30% of the stand total. The next most abundant species is black oak which accounts for 17% of the volume in this stand. Mortality of white ash, red oak and black oak was noted throughout the stand. There were varying degrees of mortality in white oak as well. The natural regeneration throughout the stand consists primarily of young sugar maples competing with young oak species.

The objective of this cover type is to provide multiple economic and ecological services specifically a quality hardwood timber stand, dominated by oak and hickory, while providing hard mast and early to mid-seral habitat for wildlife.

Given the current stand conditions and stocking level an improvement harvest would thin the stand, capture mortality of dying trees, remove low quality trees, release crop trees, and to release advanced natural oak regeneration in the understory wherever it may occur. If a harvest were conducted the composition of the site would remain the same with the majority of the volume being in white oaks. However, many declining ash trees would be removed from the overstory. Some ash trees did not show signs of decline and those exhibiting potential resistance may be retained in the tract.

In areas with particularly vigorous oak regeneration or inadequate quality overstory group selection or patch-cut openings may be applied. These openings will provide early seral habitat in addition to the release of the desired trees.

Stand 2: Mixed Hardwoods – 35 acres.
This cover type is the second largest cover type in the tract and is over stocked. This cover type is varied with the most abundant species being yellow-poplar making up 26% of the volume in the stand. Sugar maple is the second most common species making up 16% of the volume. This cover type was largely avoided during the 1994 timber sale, and potentially because of that, the stand has become stagnant with large dying or hollow trees.

Given the current stand conditions and stocking level an improvement harvest would thin the stand, capture mortality of dying trees, remove low quality trees, release crop trees, and to release advanced natural regeneration in the understory wherever it may occur. If a harvest were conducted the composition of the site would remain the same with much of the volume being in yellow-poplar and sugar maple.

Stand 3: Conifer – 14 acres
The conifer cover type consists of two distinct conifers, 9 acres of the conifer stand is dominated by white pine and the remaining 5 acres has shortleaf pine as the dominant species. The conifer cover type was completely avoided during the 1994 timber sale.

The white pine stand is highly overstocked with white pine making up 89% of the stand volume. Most hardwoods present in the stand are in the subcanopy or in the transition area between the mixed hardwood and white pine cover types. The shortleaf pine stand is also highly overstocked with shortleaf pine making up 79% of the stand volume. Since the land which the pine is located on was acquired in 1965 it can be assumed that these trees were planted soon afterward making them approximately 55 years old. For both conifer stands row thinning is recommended to uniformly reduce the stocking and volume present. If every third row is selected for harvest, we can reduce the stocking level to a more sustainable number while still being fully stocked. Species other than the dominant pines can be singly selected for harvest where necessary.

Summary Tract Silvicultural Prescription and Proposed Activities
Due to the current stocking and overall condition of the tract an improvement harvest is recommended and could be started as early as this year or 2025. Overall, the tract volume would be reduced 30-50%. This would largely be done by single-tree and group selection; however, a row thinning would likely be best for the conifer cover type in the tract. Some patch-cut openings may occur in the remaining cover types where openings would be beneficial to the stand. TSI would be recommended both before and after the harvest to pretreat invasives present and then return to the tract to remove unmerchantable trees and continue removing any invasives. Due to the proximity and similar stand types, this harvest could occur at the same time as 6342005 and 6342007. This would minimize time spent during management activities to ensure the least effect on recreation, wildlife, hydrology, and other concerns mentioned in this plan.

This harvest will largely not change the composition of the tract. The forested areas will remain

forested retaining the current dominant species present.

During the harvest, part of the Upper Blue River Horse Trail and a portion of the Adventure Trail would be temporarily closed for public safety. However, under current restrictions, cutting would only occur from November 16th to April 1st and the remaining activities needed to reopen the trails would likely be completed soon after. Therefore, the trail closures and reroutes would not affect most of the spring, summer and fall recreation. Hunting opportunities should be improved by the maintenance of early successional habitat and the recruitment of hard mast producers such as oak and hickory to provide deer and small mammal browse.

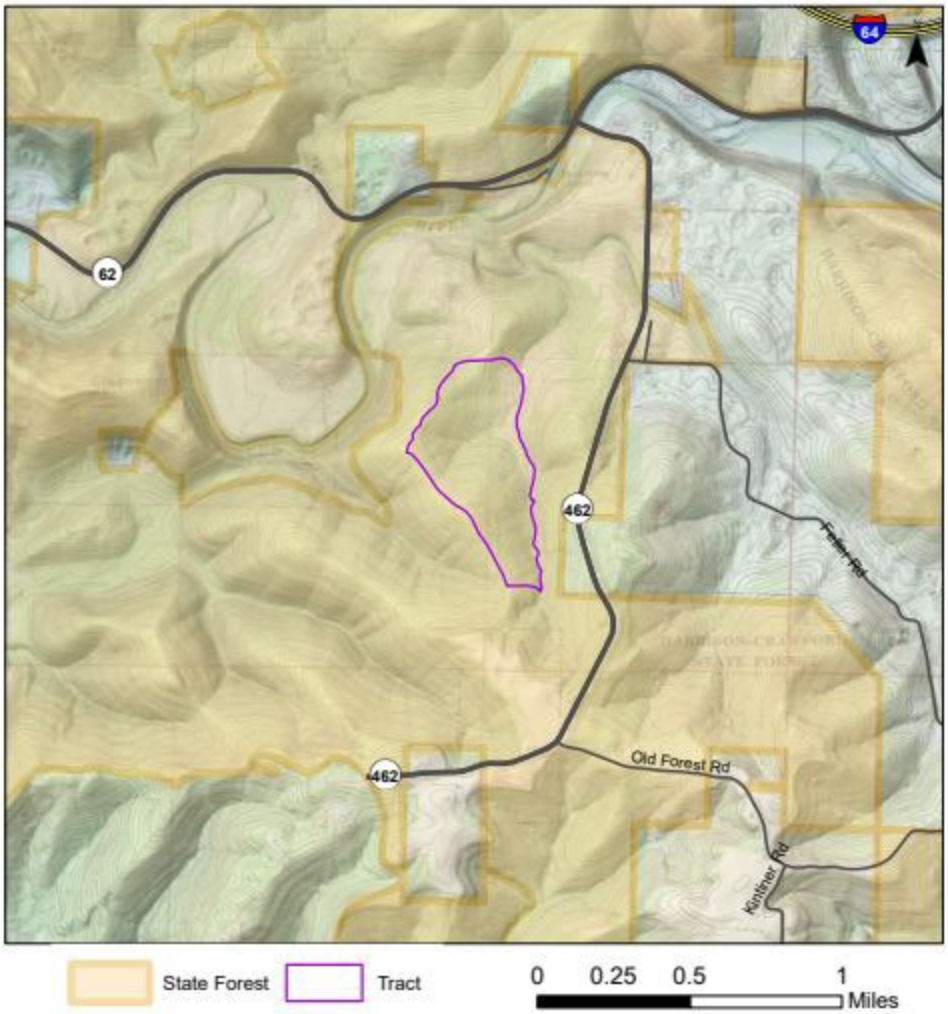
BMPs will be followed throughout the harvest to ensure any management activities impact to soils is limited. Soil disturbance will largely be confined to the log yard and main skid trails. The BMPs will also ensure water quality is not permanently affected. The following of these BMPs will be contractually required of management operators.

Once the harvest is complete, post-harvest TSI should be conducted. The stand should be revisited for regeneration opening and post-harvest checks within 3 years to ensure proper regeneration and growth is occurring. In about 20 years the stand should be revisited for another inventory and a new management guide can be created.

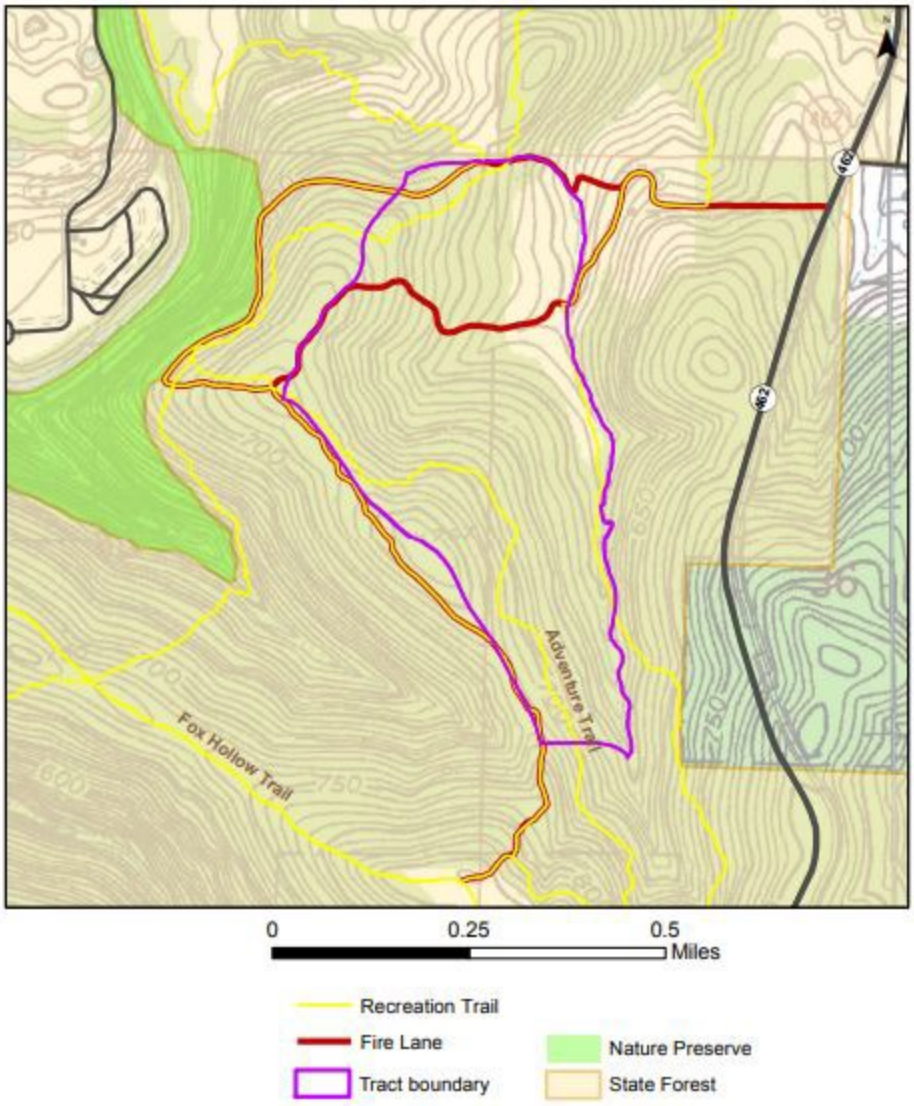
Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Fire lane maintenance	2024-2026
Pre-harvest TSI and invasive treatments	2024-2026
Mark harvest	2025-2027
Sell timber	2025-2027
Post-harvest TSI and invasive treatments	One to two years after harvest
3-year regeneration opening review	Three years after harvest
Next forest inventory	2044

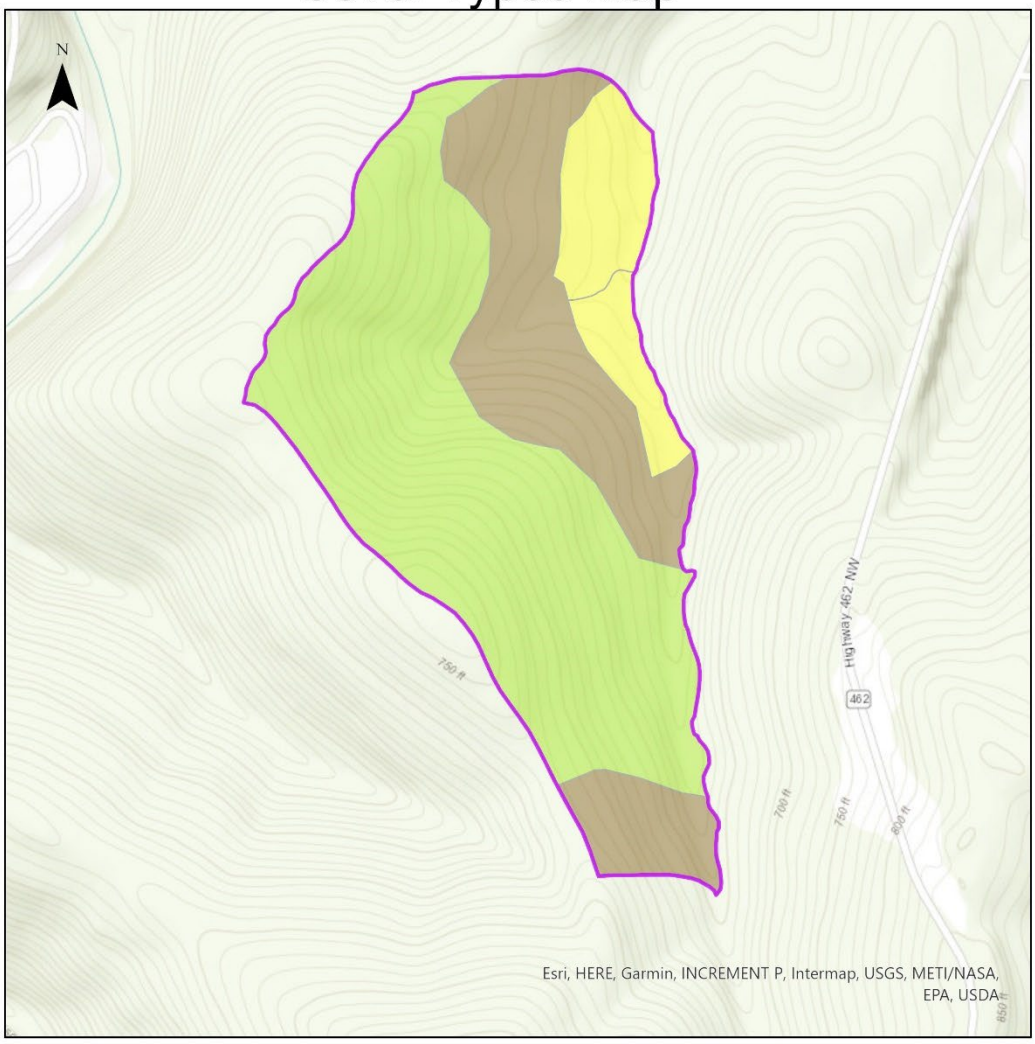
Harrison-Crawford State Forest
Location Map
Compartment 20 Tract 6



Harrison-Crawford State Forest
Compartment 20 Tract 6
Tract Map



Harrison-Crawford State Forest
Compartment 20 Tract 6
Cover Types Map



Harrison Crawford State Forest | Compartment: 20 | Tract: 07
Forester: Daniel Martin | Date: June 14, 2024 | Acres: 53
Management Cycle End Year: 2044 | Management Cycle Length: 20 years

Location
Tract 07, also known as 6342007, is primarily in Section 35, T3S, R2E with a southeastern portion in Section 36, T3S, R2E, in Harrison County, Indiana, approximately 6.5 miles west of Corydon, Indiana. It can be accessed from a fire lane off State Road 462.

General Description
This tract is on a slope with the flat area at the top of the hill being the tract boundary to the northeast and a drainage being the tract boundary to the southwest. The entire tract is forested consisting of mesic oak-hickory and mixed hardwoods with most of the acreage being mesic oak-hickory. This tract has not been harvested under the state's management.

History
- 1934 Southeastern portion purchased from Mackintosh.
- 1940 Northwestern portion purchased from Rothrock.
- 1979 Records and ground proof indicate timber stand improvement (TSI) work was performed.
- 2009 Inventory and management guide written by Dieter Rudolph.
    - Total basal area /acre – 118
    - Total BDFT /Acre – 6,170
    - Total BDFT – 320,630
    - Top 5 species by volume

Species	BDFT
White oak	123,760
Eastern red cedar	53,070
Post oak	27,600
Pignut hickory	17,620
Chinkapin oak	16,860

Landscape Context
The surrounding landscape is primarily managed forests owned and managed by the Indiana Department of Natural Resources (IDNR). Partially in this tract and in neighboring tracts there is the Greenbrier Knob Nature Preserve and about a mile southwest of the tract boundary is O'Bannon Woods State Park. These are primarily owned or managed by IDNR divisions other than the Division of Forestry. There are private residences less than ½ mile east of the tract and also private farmland about a mile east of the tract boundary.

Topography, Geology and Hydrology
This tract is on a southwestern facing slope that goes down to an unnamed mapped stream which drains into the Blue River. Located in the tract are various karst features which will be buffered according to the 2022 Best Management Practices (BMP) Field Guide.

Soils
There are 4 unique soil types located in this tract

22 acres of Caneyville-Rock outcrop complex, 25 to 60 percent slopes.
16 acres of Gilpin-Tipsaw-Ebal complex, 18 to 35 percent slopes, stony.
11 acres of Deuchars-Apalona-Wellston silt loams, 6 to 12 percent slopes, eroded.
4 acres of Ebal-Gilpin-Wellston silt loams, 10 to 22 percent slopes, eroded.

Access
A gated gravel fire lane from S.R. 462 provides access to the tract. Sections of the Upper Blue River Horse Trail will overlap with this fire lane going to the tract and within the tract. Additional gravel may be warranted depending on the nature of the management activity.

Boundary
All tract borders are interior to the state and defined by natural features (e.g., drain ravines, streams, trails, etc.).

Ecological Considerations
Most of this tract consists of an oak-hickory cover type which will provide hard mast food supply for various wildlife. There is also an abundance of snags throughout the tract which can provide habitat for a plethora of wildlife species. During the inventory signs or wildlife observed included eastern box turtles (*Terrapene carolina*), white-tailed deer (*Odocoileus virginianus*) and eastern wild turkey (*Meleagris gallopavo*).

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags and legacy trees. Snags are standing dead or dying trees. Snags provide value to a stand in the form of habitat features for foraging activity, den sites, decomposers, bird perching, and bat roosting. Snags eventually contribute to the future pool of downed woody material. Downed woody debris provides habitat for many species and contributes to healthy soils. Legacy trees are live trees of a certain species and diameter class, that have potential future value to various wildlife species, if retained in the stand.

In the compartment that includes this tract, inventory data indicate snag densities exceed Division of Forestry targets in all size classes, including “optimal” targets. Additionally, where there was a sufficient sample size for estimation, legacy tree densities exceed compartment-level targets.

There are various invasive species present such as ailanthus and Japanese stilt grass. Pre- and post-harvest invasive species control should take place to remove or minimize the effect of these species. There may be other invasive species present that were not seen during inventory that should be treated as well.

A formal Ecological Review process, which includes a search of Indiana’s Natural Heritage Database, is part of the management planning process. If Rare, Threatened or Endangered species were found to be associated with this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the population viability of those species.

Recreation
Part of the Upper Blue River Horse Trail parallels the northeastern edge of this tract. That trail also doubles as the fire lane that provides access to this tract. In the northwestern corner of this tract there is a small section of the Adventure Trail as well.

Cultural
Cultural resources may be present, but their location(s) is protected. Adverse impacts to significant cultural resources will be avoided during any activities.

Tract Subdivision Description and Silvicultural Prescription

There are 2 unique cover types located in this tract consisting of mesic oak-hickory and mixed hardwoods. Throughout the tract group selection or patch-cut openings may be applied to certain areas for multiple reasons, such as the overstory suffering from mortality, vigorous natural regeneration, or poor-quality trees. These openings will provide early seral habitat in addition to the release of the desired trees. 5-15% of the whole tract would have these openings as they would have to be large enough to achieve the desired effect of both habitat and regeneration with adequate sunlight for long enough to allow regenerating trees to become part of the canopy.

For multiple reasons low quality or understory trees may not be cut during the harvest. A post-harvest timber stand improvement (TSI) would help reduce poor quality or competing trees and favor oak or the desired species to not alter the composition of the cover type.

TSI can include cutting, girdling, and herbicide application to low value trees as well as potentially prescribed fire. If a prescribed burn is planned in this area, a burn plan will be written and followed, this includes burning during the dormant season and in accordance with all prescribed fire guidelines. During the post-harvest TSI any invasive species, if not already treated prior to harvest, can also be removed.

The current forest resource inventory was completed on 6/14/24 by Forester Daniel Martin. A summary of the estimated tract inventory results are located in the tables below.

Tract Summary Data (Trees > 11" DBH)

Category	Estimate
Tract Acres (Forested)	53
Gingrich Stocking Percent (%)	88%
Trees Per Acre	131
Basal Area Per Acre (SQFT)	107
Volume Per Acre (BDFT)	7,572

Tract Summary Data (trees >11"DBH):

Species	# of Trees	Total Bdft
White Oak	985	196,350
Eastern Red cedar	744	33,190
Pignut Hickory	287	31,200
Sugar Maple	602	29,460
Black Oak	116	28,760
Northern Red Oak	178	23,030
Chestnut Oak	78	22,200
Shagbark Hickory	116	10,490
Post Oak	90	8,860
Chinkapin Oak	88	8,240
Yellow Poplar	28	6,960
White ash	9	2,590
Total:	3,321	401,330

Stand 1: Mesic Oak-Hickory – 42 acres.
This cover type makes up most of the tract acreage and is fully stocked. White oak is most of the volume in this stand making up 51% of the stand total. The next most abundant species are black oak and pignut hickory, both of which make up only 8% of the stand total each. Black oak mortality was noted throughout the stand

The objective of this cover type is to provide multiple economic and ecological services specifically a quality hardwood timber stand, dominated by oak and hickory, while providing hard mast and early to mid-seral habitat for wildlife.

Given the current stand conditions and stocking level an improvement harvest would thin the stand, capture mortality of dying trees, remove low quality trees, release crop trees, and to release advanced natural oak regeneration in the understory wherever it may occur. If a harvest were conducted the composition of the site would remain the same with the majority of the volume being in white oaks.

In areas with particularly vigorous oak regeneration or inadequate quality overstory group selection or patch-cut openings may be applied. These openings will provide early seral habitat in addition to the release of the desired trees.

Stand 2: Mixed Hardwoods – 11 acres.
This cover type is fully stocked and is the second largest cover type in the tract. This cover type is varied with the most abundant species being eastern red cedar making up 34% of the volume in the stand. White oak is the second most common species making up 29% of the volume.

Given the current stand conditions and stocking level an improvement harvest would thin the stand, capture mortality of dying trees, remove low quality trees, release crop trees, and to release advanced natural regeneration in the understory wherever it may occur. If a harvest were conducted the overstory would be altered to promote the mixed hardwoods located in the stand and remove much of the cedar which is currently making up most of the volume. Approximately

one acre of the Greenbrier Knob Nature Preserve is within this cover type. This area will be avoided during management activities prescribed in this guide.

Summary Tract Silvicultural Prescription and Proposed Activities

Due to the current stocking and overall condition of the tract an improvement harvest is recommended and could be started as early as this year or 2025. Overall, the tract volume would be reduced 25-45%. This would largely be done by single-tree and group selection. Some patch-cut openings may occur in the remaining cover types where openings would be beneficial to the stand. TSI would be recommended both before and after the harvest to pretreat invasives present and then return to the tract to remove unmerchantable trees and continue removing any invasives. Due to the proximity and similar stand types, this harvest could occur at the same time as 6342005 and 6342006. This would minimize time spent during management activities to ensure the least effect on recreation, wildlife, hydrology, and other concerns mentioned in this plan.

This harvest will largely not change the composition of the tract. The oak-hickory cover type will remain forested retaining the current dominant species present. The mixed hardwoods cover type will also remain forested however cedar will be reduced to not be the most dominant species.

During the harvest, part of the Upper Blue River Horse Trail and a portion of the Adventure Trail would be temporarily closed for public safety. However, under current restrictions, cutting would only occur from November 16th to April 1st and the remaining activities needed to reopen the trails would likely be completed soon after. Therefore, the trail closures and reroutes would not affect most of the spring, summer and fall recreation. Hunting opportunities should be improved by the maintenance of early successional habitat and the recruitment of hard mast producers such as oak and hickory to provide deer and small mammal browse.

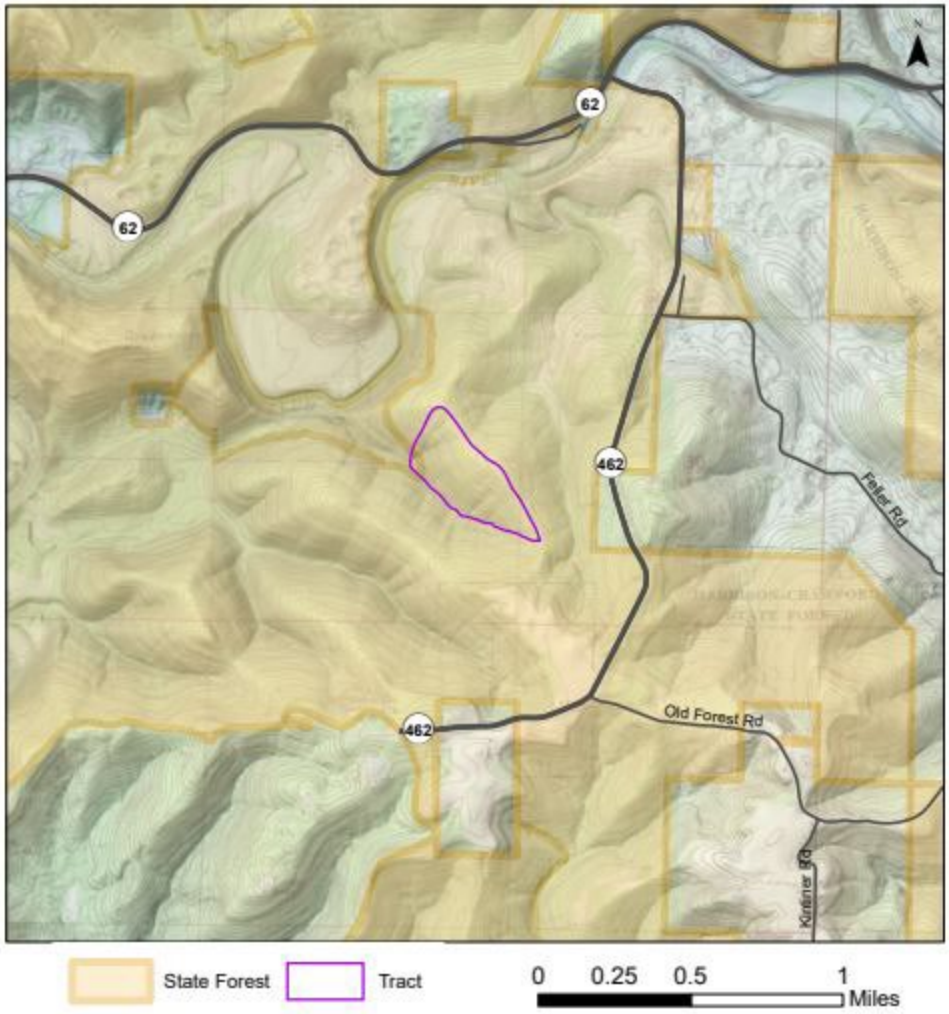
BMPs will be followed throughout the harvest to ensure any management activities impact to soils is limited. Soil disturbance will largely be confined to the log yard and main skid trails. The BMPs will also ensure water quality is not permanently affected. The following of these BMPs will be contractually required of management operators.

Once the harvest is complete, post-harvest TSI should be conducted. The stand should be revisited for regeneration opening and post-harvest checks within 3 years to ensure proper regeneration and growth is occurring. In about 20 years the stand should be revisited for another inventory and a new management guide can be created.

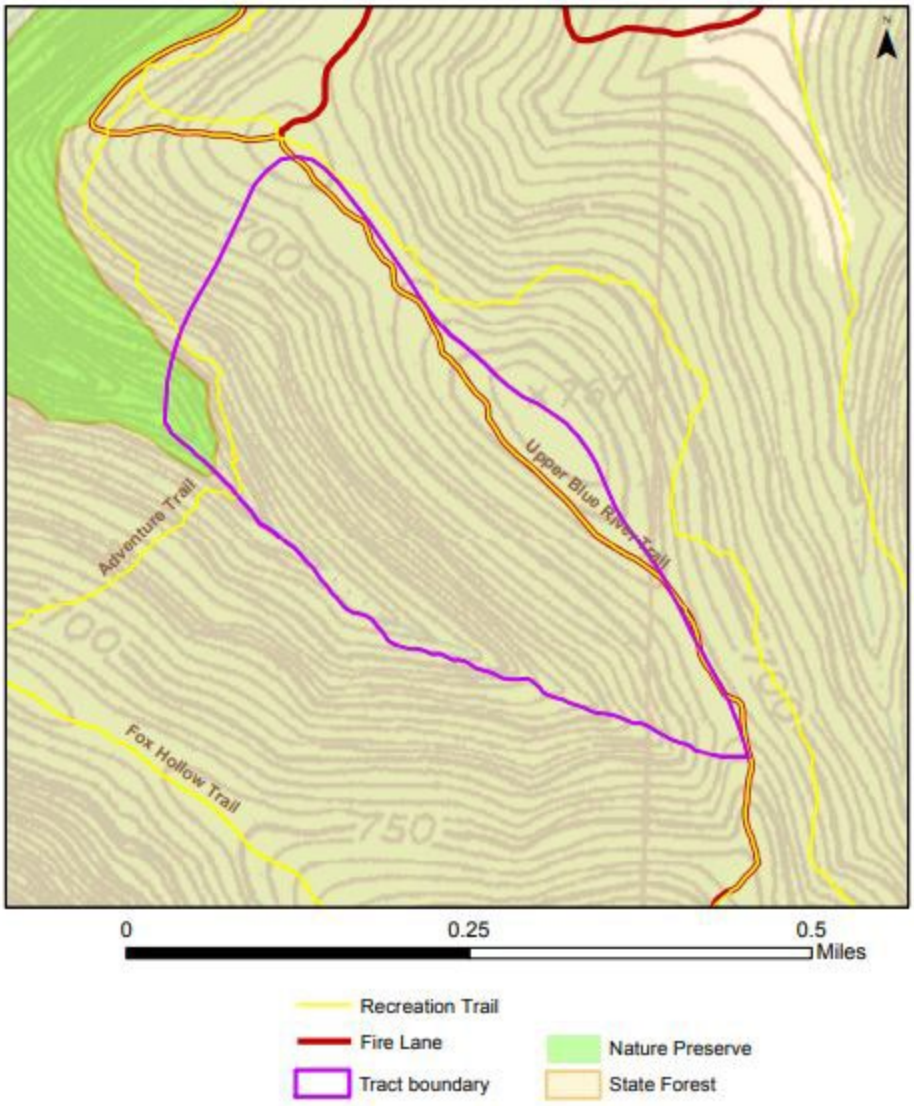
Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Fire lane maintenance	2024-2026
Pre-harvest TSI and invasive treatments	2024-2026
Mark harvest	2025-2027
Sell timber	2025-2027
Post-harvest TSI and invasive treatments	One to two years after harvest
3-year regeneration opening review	Three years after harvest
Next forest inventory	2044

Harrison-Crawford State Forest
Location Map
Compartment 20 Tract 7



Harrison-Crawford State Forest
Compartment 20 Tract 7
Tract Map



Harrison-Crawford State Forest
Compartment 20 Tract 7
Cover Types Map

0 0.13 0.25 Miles

Cover Types

- Mesic Oak-Hickory
- Mixed Hardwoods
- Nature Preserve