Indiana Department of Natural Resources
Division of Forestry

Indiana Department of Natural Resources

Resource Management Guides
Morgan-Monroe and Yellowwood State Forest
30-day Public Comment Period (May 8, 2024 – June 6, 2024)

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 years, 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 Morgan-Monroe and Yellowwood State Forests.

Compartment 3 Tract 6
Compartment 3 Tract 11
Compartment 4 Tract 10
Compartment 16 Tract 9
Compartment 16 Tract 24
Compartment 7 Tract 19
Compartment 11 Tract 1
Compartment 11 Tract 2
Compartment 16 Tract 23

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.

Morgan-Monroe State Forest
Compartment 3 Tract 6
Resource Management Guide (Amendment)
August 17, 2023

Link to original RMG:
https://www.in.gov/dnr/forestry/files/fo-MMSF_C3T6_09242015.pdf

Compartment 3 Tract 6 (Amendment)

Identified as 6370306. To view compartment and tracts:
https://www.in.gov/dnr/forestry/files/compmaps/fo-MM_CT_Boundaries.pdf

A recent field reconnaissance of compartment 3 tract 6 indicates the overall tract condition remains relatively unchanged from the 2015 forest inventory. The most notable change observed was the mortality of ash trees throughout the tract due to the Emerald ash borer. This mortality has resulted in the loss of an estimated 100 - 150 trees. However, the loss had little impact to the overall stocking level of the tract accounting for roughly two trees per acre and a half square foot of basal area per acre.

Overall, the stocking levels, quality, vigor, and species composition of the mixed hardwood and oak-hickory cover types are essentially the same. Some scattered mortality and wind throw/damage has occurred, primarily on the ridgetop along Gose Creek Rd. The understory and mid canopy layers remain dominated by shade tolerant maple and American beech.

The 2015 RMG did not consider the use of prescribed fire. It is recommended that a prescribed fire regime be developed for the tract and implemented on a 3-5 year schedule. Use of prescribed fire within the central hardwood region can be used to reduce the density of shade tolerant species such as American beech and maple, maintain or enhance wildlife habitat, reduce leaf litter to provide conditions more favorable for the establishment (i.e., germination) of species like oak and hickory, release nutrients being held in dead plant matter, and lower fuel loads to help minimize the risk of uncontrolled large-scale wildfires. If needed, follow up TSI on mid-story and smaller shade tolerant trees not removed through fire should be completed to improve diffuse light conditions for optimal oak regeneration.

An ecological review was completed for this amended RMG.

The net gain from overall growth is estimated to add little if any additional removal volume due to the loss of the white ash.

Morgan-Monroe State Forest
Compartment 3 Tract 11
Resource Management Guide (Amendment)
August 17, 2023

Link to original RMG:
https://www.in.gov/dnr/forestry/files/fo-MMSF_C3T11_09252015.pdf

Compartment 3 Tract 11 (Amendment)

Identified as 6370311. To view compartment and tracts:
https://www.in.gov/dnr/forestry/files/compmaps/fo-MM_CT_Boundaries.pdf

A recent field reconnaissance of compartment 3 tract 11 indicates the overall tract condition remains relatively unchanged from the 2015 forest inventory.

Overall, the stocking levels, quality, vigor and species composition of the mixed hardwood and oak-hickory cover types are essentially the same. Some chestnut oak mortality was observed in a few pockets throughout the stand, typically consisting of 2-3 trees. Wind throw/storm damage has occurred, primarily with mature black oak on the ridgetop along Gose Creek Rd. The understory and mid canopy layers remain dominated by shade tolerant maple and American beech.

The 2015 RMG did not consider the use of prescribed fire. It is recommended that a prescribed fire regime be developed for the tract and implemented on a 3-5 year schedule. Use of prescribed fire within the central hardwood region can be used to reduce the density of shade tolerant species such as beech and maple, maintain or enhance wildlife habitat, reduce leaf litter to provide conditions more favorable for the establishment (i.e., germination) of species like oak and hickory, release nutrients being held in dead plant matter, and lower fuel loads to help minimize the risk of uncontrolled large-scale wildfires. If needed, follow up TSI on mid-story and smaller shade tolerant trees not removed through fire should be completed to improve diffuse light conditions for optimal oak regeneration.

An ecological review was completed for this amended RMG.

The net gain from overall growth is estimated to add an additional 5 - 10% removal volume to the original projected harvest volume.

Morgan-Monroe State Forest
Compartment 4 Tract 10
Resource Management Guide (Amendment)
August 17, 2023

Link to original RMG:
https://www.in.gov/dnr/forestry/files/fo-MMSF_C4T10_07262016.pdf

Compartment 4 Tract 10 (Amendment)

Identified as 6370410. To view compartment and tracts:
https://www.in.gov/dnr/forestry/files/compmaps/fo-MM_CT_Boundaries.pdf

A field reconnaissance of compartment 4 tract 10 indicates the overall tract condition remains relatively unchanged from the 2016 forest inventory. The most notable change observed was the mortality of ash trees throughout the tract due to the Emerald ash borer. This mortality has resulted in the loss of an estimated 50 trees. However, the loss had little impact to the overall stocking level of the tract as it only accounts for roughly one tree per acre and half square foot of basal area per acre.

Overall, the stocking levels, quality, vigor, and species composition of the mixed hardwood and oak-hickory cover types are essentially the same. Some scattered mortality and wind throw/damage has occurred, primarily with mature black oak. The understories and mid canopy layers remain dominated by shade tolerant maple and American beech.

The 2016 RMG did not address the use of prescribed fire. It is recommended that a prescribed fire regime be developed for the tract and implemented on a 3-5 year schedule. Use of prescribed fire within the central hardwood region can be used to reduce the density of shade tolerant species such as beech and maple, maintain or enhance wildlife habitat, reduce leaf litter to provide conditions more favorable for the establishment (i.e., germination) of species like oak and hickory, release nutrients being held in dead plant matter, and lower fuel loads to help minimize the risk of uncontrolled large-scale wildfires. If needed, follow up TSI on mid-story and smaller shade tolerant trees not removed through fire should be completed to improve diffuse light conditions for optimal oak regeneration.

The 2016 RMG noted multiflora rose and Japanese stiltgrass as the invasive species observed. A significant amount of autumn olive was observed during the recent reconnaissance of the tract between Rosenbaum Rd and the south log yard. There were also numerous bush honeysuckle plants, as well as a couple barberry plants identified near the north log yard. These areas should be treated prior to the commencement of management activities.

An ecological review was completed for this amended RMG.

The net gain from overall growth is estimated to add little if any additional removal volume due to the loss of the white ash.

Morgan-Monroe State Forest
Compartment 11 Tract 1
Resource Management Guide (Amendment)
August 17, 2023

Link to original RMG:
https://www.in.gov/dnr/forestry/files/fo-MMSF_C11T1_06082016.pdf

Compartment 11 Tract 1 (Amendment)

Identified as 6371101. To view compartment and tracts:
https://www.in.gov/dnr/forestry/files/compmaps/fo-MM_CT_Boundaries.pdf

A recent field reconnaissance of compartment 11 tract 1 indicates the overall tract condition remains mostly unchanged from the 2016 forest inventory. The most notable change was ash mortality throughout the tract due to Emerald ash borer. This mortality has resulted in a loss of an estimated 150 trees. However, the loss had little impact to the overall stocking level of the tract as it only accounts for roughly one to two trees per acre and half square foot of basal area per acre.

In 2018, a small area within the white pine stand was used for DNR level 4 chainsaw training. Approximately 15 – 20 trees, mostly white pine and black locust, were felled for training purposes. This training activity had no impact on the overall stocking level and species composition of the tract. It appears the pine, planted in the 1930's, has reached maturity showing signs of decline. The recommendation is to remove the non-native pine within the 11.9 acres through a regeneration opening/patch cuts to allow for the regeneration of native hardwoods.

Overall, the stocking levels, quality, vigor, and species composition of the mixed hardwood and oak-hickory cover types are essentially the same. Some scattered mortality and wind throw/damage has occurred, primarily with mature black oak near the north end of the tract. The understories and mid canopy layers are still dominated with shade tolerant maple-beech.

The original RMG did not address the use of prescribed fire. It is recommended that a prescribed fire regime be developed for the tract and implemented on a 3-5 year schedule. Use of prescribed fire within the central hardwood region can be used to reduce the density of shade tolerant species such as beech and maple, maintain or enhance wildlife habitat, reduce leaf litter to provide conditions more favorable for the establishment (i.e., germination) of

species like oak and hickory, release nutrients being held in dead plant matter, and lower fuel loads to help minimize the risk of uncontrolled large-scale wildfires. If needed, follow up TSI on mid-story and smaller shade tolerant trees not removed through fire should be completed to improve diffuse light conditions for optimal oak regeneration.

An ecological review was completed for this amended RMG.

The net gain from overall growth is estimated to add little if any additional removal volume due to the loss of the white ash.

Morgan-Monroe State Forest
Compartment 11 Tract 2
Resource Management Guide (Amendment)
August 17, 2023

Link to original RMG:
https://www.in.gov/dnr/forestry/files/fo-MMSF_C11T2_09242015.pdf

Compartment 11 Tract 2 (Amendment)

Identified as 6371102. To view compartment and tracts:
https://www.in.gov/dnr/forestry/files/compmaps/fo-MM_CT_Boundaries.pdf

A recent field reconnaissance of compartment 11 tract 2 indicates the overall tract condition remains mostly unchanged.

The most notable change was ash mortality throughout the tract due to Emerald ash borer. This morality resulted in a loss of an estimated 125 trees. However, the loss had little impact to the overall stocking level of the tract as it only accounts for roughly one tree per acre and half square foot of basal area per acre.

The results of the 2018 timber stand improvement (TSI) work were observed in the old field area. TSI was performed to control vines and spicebush. While some spicebush remains, its density was reduced, and efforts considered successful. Regeneration of oak, hickory, and yellow poplar was observed.

The 2015 RMG did not adequately describe the condition of the entire tract. Portions of the area can be more accurately described as an old field with broad, flat to gently sloped ridgetops. Dominant trees present are yellow-poplar, sugar maple, red maple, and ash. The same species are more or less dominant in the pole size class as well. There are approximately 20 black walnut trees present in this area, some of high quality. Vines are scattered throughout the area. Overall, portions of the stand have low stocking and the condition poor. While there are some nice trees, primarily black walnut, most trees are poorly formed and/or have low vigor. Much of the area

was originally planted with black locust. This has either died or been cut out long ago for posts. The ash is declining or is already dead. Much of the yellow poplar has died or poorly crowned due to the 2012 drought and tulip tree scale infestation.

The regeneration prescription in the 2015 RMG called for small group selection openings. Upon further inspection, the recommendation is a larger opening with a couple of green retention islands. The majority of the black walnut trees within the opening would be retained as seed source. Similar to the original prescription, the adjusted management should result in a vigorous, early successional stand of native mixed hardwoods, but on a larger scale.

Overall, the stocking levels, quality, vigor, and species composition of the mixed hardwood and oak-hickory cover types are essentially the same. In most areas the understories and mid canopy layers are still dominated with shade tolerant maple-beech.

The original RMG did not address the use of prescribed fire. It is recommended that a prescribed fire regime be developed for the tract and implemented on a 3-5 year schedule. Use of prescribed fire within the central hardwood region can be used to reduce the density of shade tolerant species such as beech and maple, maintain or enhance wildlife habitat, reduce leaf litter to provide conditions more favorable for the establishment (i.e., germination) of species like oak and hickory, release nutrients being held in dead plant matter, and lower fuel loads to help minimize the risk of uncontrolled large-scale wildfires. If needed, follow up TSI on mid-story and smaller shade tolerant trees not removed through fire should be completed to improve diffuse light conditions for optimal oak regeneration.

The 2015 RMG noted multiflora rose, autumn olive, and Japanese stiltgrass as invasive species observed. However, bush honeysuckle and vinca were observed in a small 3-4 acre area in the northeast portion of tract. Due to the low stocking, poor quality, and moderate invasive infestation in this area, it would likely not be included as part of the prescribed harvest operation. Therefore, invasive treatment efforts could occur independent of the other prescribed management activities for the tract.

An ecological review was completed for this amended RMG.

The net gain from overall growth is estimated to add little if any additional removal volume due to the loss of the white ash.

Yellowwood State Forest
Compartment 7 Tract 19
Resource Management Guide (Amendment)
August 17, 2023

Link to original RMG:
https://www.in.gov/dnr/forestry/files/fo-YWSF_C7T19_07252017.pdf

Compartment 7 Tract 19 (Amendment)

Identified as 6420719. To view compartment and tracts:
https://www.in.gov/dnr/forestry/files/compmaps/fo-MM_CT_Boundaries.pdf

A recent field reconnaissance of compartment 7 tract 19 indicates the overall tract condition remains mostly unchanged from the 2017 forest inventory. The most notable change was ash mortality throughout the tract due to Emerald ash borer. This mortality has resulted in a loss of an estimated 38 trees. However, the loss had little impact to the overall stocking level of the tract as it only accounts for less than one tree per acre and half square foot of basal area per acre.

Overall, the timber types outlined in the 2017 RMG remain largely the same. Blowdown from past and more recent weather events was observed, though the losses are not substantial enough to alter the composition of the forest. Most of the trees that were uprooted were mature black and red oaks.

The 2017 RMG did not address the use of prescribed fire. It is recommended that a prescribed fire regime be developed for the tract and implemented on a 3-5 year schedule. Use of prescribed fire within the central hardwood region can be used to reduce the density of shade tolerant species such as beech and maple, maintain or enhance wildlife habitat, reduce leaf litter to provide conditions more favorable for the establishment (i.e., germination) of species like oak and hickory, release nutrients being held in dead plant matter, and lower fuel loads to help minimize the risk of uncontrolled large-scale wildfires. If needed, follow up TSI on mid-story and smaller shade tolerant trees not removed through fire should be completed to improve diffuse light conditions for optimal oak regeneration.

Autumn olive and Japanese stiltgrass were both mentioned in the 2017 RMG and observed during the recent field reconnaissance. However, multiflora rose was also found within the tract. Invasive species present are sparse and would likely not be included as a part of the prescribed harvest operation. Therefore, invasive treatment efforts could occur independent of the other prescribed management activities for the tract.

An ecological review was completed for this amended RMG.

The net gain from overall growth is estimated to add little if any additional removal volume due to the loss of the white ash.

Morgan-Monroe State Forest | Compartment: 16 | Tract: 09
Forester: Phil Jones | Date: 1/25/2024 | Acres: 116
Management Cycle End Year: 2044 | Management Cycle Length: 20 Years

Location

Compartment 16 Tract 9, otherwise known as 6371609 is in Monroe County, Benton Township, Section(s) 27, 28 – T9N – R1E. It is approximately 3.5 miles northeast of Bloomington, Indiana, and located off Birdie Galyan Rd.

General Description

The tract contains ridges and moderate slopes generally running north and south. The broad ridge in the northern half of the tract was planted to Virginia pine around the time of state acquisition in the early 1950's. The Virginia pine is slowly declining and converting to mixed hardwoods like yellow-poplar, sassafras, and maples. There are five old regeneration openings from a 1988 harvest that are comprised of pole sized mixed hardwoods. The remainder of the tract, particularly the main ridge to the south, is an excellent oak-hickory stand. Stocking is above 95% and contains many medium to large size white, black, and scarlet oaks. A small broad ridge in the northeast corner of the tract has an almost solid pignut and shagbark hickory overstory.

History

- 1950, 1951 – Land Acquisition; Spriggs, Mathers
- 1950's – Virginia Pine planting
- 1975 - Forest Inventory/Cruising; 2,637 bd.ft./ac
- 1987 - Forest Inventory/Cruising; 6,381 bd.ft./ac
- 1988 - Resource Management Guide
- 1988 - Timber Sale; Weston Pulp and Paper Mfg. Co, 98,390 bd.ft., $14,502
- 1989 - TSI – Opening Completion
- 2004 - Forest Inventory/Cruising
- 2004 - Resource Management Guide
- 2018 - Forest Inventory/Cruising
- 2024 - Resource Management Guide

Landscape Context

The surrounding landscape near the tract is predominantly closed-canopy deciduous forest. The primary block of the State Forest lies to the north and west. Private landownerships dominate to the east and south with a mix of developed areas, forest and agricultural lands.

Topography, Geology, Hydrology

The general topography of this region consists of unglaciated, sharply dissected hills, narrow ridges and valleys. The underlying bedrock is Mississippian sandstone, shale, and siltstone. The tract has varied topography with ridgetops, bottomland areas, and slopes up to 30%. The tract consists of a primary ridge trending north to south, with east to west running finger ridges located near the eastern boundary.

There are two mapped intermittent streams running north to south, with the western most forming the tract boundary. The tract lies within the North Fork Salt Creek watershed and Brummett Creek-North Fork Salt Creek subwatershed.

Soils

Soils within the tract include the following (also refer to attached soils map):

BdB- Bedford silt loam, 2 to 6 percent slopes
This gently sloping, deep, moderately well drained soil is on uplands. There is a fragipan at 1.5-3.5 feet that can restrict root penetration. It is well suited to trees and has a site index of 70 for white oak and 90 for yellow poplar.

BkF- Berks-Weikert complex, 25 to 75 percent slopes
This complex consists of steep and very steep, moderately deep and shallow, well drained soils on side slopes of the uplands. Erosion hazard, equipment limitations, and seedling mortality are concerns in management due to slope and depth to bedrock. These factors should be considered when planning management activities and implementing Best Management Practices for Water Quality. This complex has a site index of 70 for northern red and black oak.

CrC- Crider silt loam, 6 to 12 percent slopes
This moderately sloping, deep, well-drained soil is on narrow and broad convex ridgetops of the uplands. It is well suited to trees. This soil has a site index of 88 for northern red oak and 97 for yellow poplar.

HaD- Hagerstown silt loam, 12 to 18 percent slopes
This strongly sloping, deep, well-drained soil is on side slopes of the uplands. It is well suited to trees. Erosion hazards, equipment limitations, and plant competition are the main management concerns. These should be considered when during management planning and implementation of Best Management Practices for Water Quality. This soil has a site index of 85 for northern red oak and 95 for yellow poplar.

WmC- Wellston-Gilpin silt loams, 6 to 20 percent slopes
These moderately sloping to moderately steep, well drained soils are on side slopes and ridgetops in the uplands. They are well suited to trees. This complex has a site index for northern red oak of 71 in the Wellston and 80 in the Gilpin.

Access

This tract is accessible via a cable gate and fire lane off Upper Birdie Gaylan Road. The gate is approximately 1 mile southeast of the intersection of Upper Birdie Gaylan and Mt. Gilead roads. Access within the tract is good, with no significant limitations to resource management.

Boundary

Privately owned property completely borders this tract to the east and south. Private boundaries were last reviewed and marked in 2024.

The remaining tract boundaries adjoin other State Forest tracts and are generally defined by deep ravines and mapped intermittent streams. A small portion of the northwest corner is delineated by a fire lane.

Ecological Considerations

This tract contains diverse vegetation and wildlife resources (age, type, structure) conducive to providing habitat for a variety of wildlife species. Wildlife noted included deer, turkey, box turtles, mice, and songbirds. Habitat includes mature closed canopy forest, a fair amount of pine, and a scattering of early to mid-successional forests stands.

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.

Inventory data for Compartment 16 Tract 9 indicates that the tract meets maintenance level guidelines for forest stand snag density in all size classes. The prescribed management will maintain or enhance the relative abundance of these features.

Invasive species were noted at the time of inventory. Japanese stiltgrass is present on the fire lanes and scattered on ridgetops within this and adjacent tracts. Control will require the use of a higher capacity vehicle mounted spray unit. Multiflora rose, autumn olive and barberry are lightly scattered along the edges of main trails, in openings and canopy gaps, and throughout riparian areas. Control of these species can be carried out through basal bark, cut stump, or spot spray foliar operations.

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 or communities.

Recreation

There are no designated recreational trails in this tract. Hunting is likely the primary activity that occurs in the tract. The fire lane off Upper Birdie Galyan Rd provides easy access for foot traffic.

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:

Mesic Oak-Hickory Stratum/cover type – 95.5 acres

Forestland classified into this stratum is dominated with mature oaks and hickories, particularly white oak, black oak, scarlet oak and pignut hickory. Mixed hardwoods, such as yellow-poplar, sugar maple and American beech are interspersed predominantly on the north and east slopes. A mix of diameters are present, but the timber resource consists of a mostly medium to large size class. White oak, yellow-

poplar, black oak, scarlet oak and pignut hickory species account for most of the total volume in the stand.

There were many opportunities for moderate thinning and release observed in these areas. The goal will be to improve growth and vigor on the highest quality oaks, hickories and yellow-poplar stems. This can be accomplished primarily through single tree selection and release thinning. Individual trees targeted for removal may include mixed hardwoods competing with oaks and hickories, suppressed trees, wind-damaged trees, fire damaged trees and declining or visibly stressed trees.

Due to the mature age of the timber, some salvage will need to take place where dieback and decline was observed during the inventory. The understory and mid canopy are composed of the typical beech and maple mix in most areas. Inventory data indicated residual stocking reduction to about 70%. Due to the lack of widespread advanced oak regeneration, these areas will need treatment to encourage regeneration if oak and hickory are to be retained for the future. Disturbance such as removal of mid-story combined with prescribed fire would be needed to encourage oak and hickory regeneration.

While exact timing of a prescribed fire is dependent upon weather and fuels conditions, most burns are conducted in the fall or spring. Prescribed fire can be used as a tool in oak-hickory ecosystems to restore, maintain, and regenerate the trees, shrubs, and herbaceous layers associated with them. This restoration and maintenance will then have the effect of supporting the wildlife that depend on oak-hickory ecosystems for survival.

Conifer Stratum/cover type – 15.5 acres

This cover type is currently a mixed stand of declining Virginia pine that is slowly converting to mixed hardwoods. It is located on a broad flat ridge at the north end of the tract. It is mostly small timber. The mixed hardwood component mostly consists of sassafras, yellow poplar, and maples. Quality is poor to average.Choose an item.

A pine to hardwood conversion is recommended for this area. This should be accomplished primarily through an even-age silvicultural method, particularly in areas still heavily dominated with Virginia pine. Any hard mast producing trees such as oaks and hickories may be left for wildlife. These can be a valuable food source as well as important perch sites for raptors. A single/group tree selection marking of the remaining pine is recommended for pockets that are mixed or have mostly converted to hardwood stands. Grapevines and invasive species can severely inhibit regeneration and growth and should be controlled prior to harvesting.

Mixed Hardwoods Stratum/cover type (Old Regeneration Openings) – 5 acres

There are roughly 5 old regeneration openings that are approximately 35 years old. Grapevines did not appear excessive and dominant species include yellow poplar, maples, blackgum, beech, and sassafras. Trees are predominantly sapling to small pole size. Grapevine control, crop tree release, coppicing and potential invasive treatments are recommended for these areas.

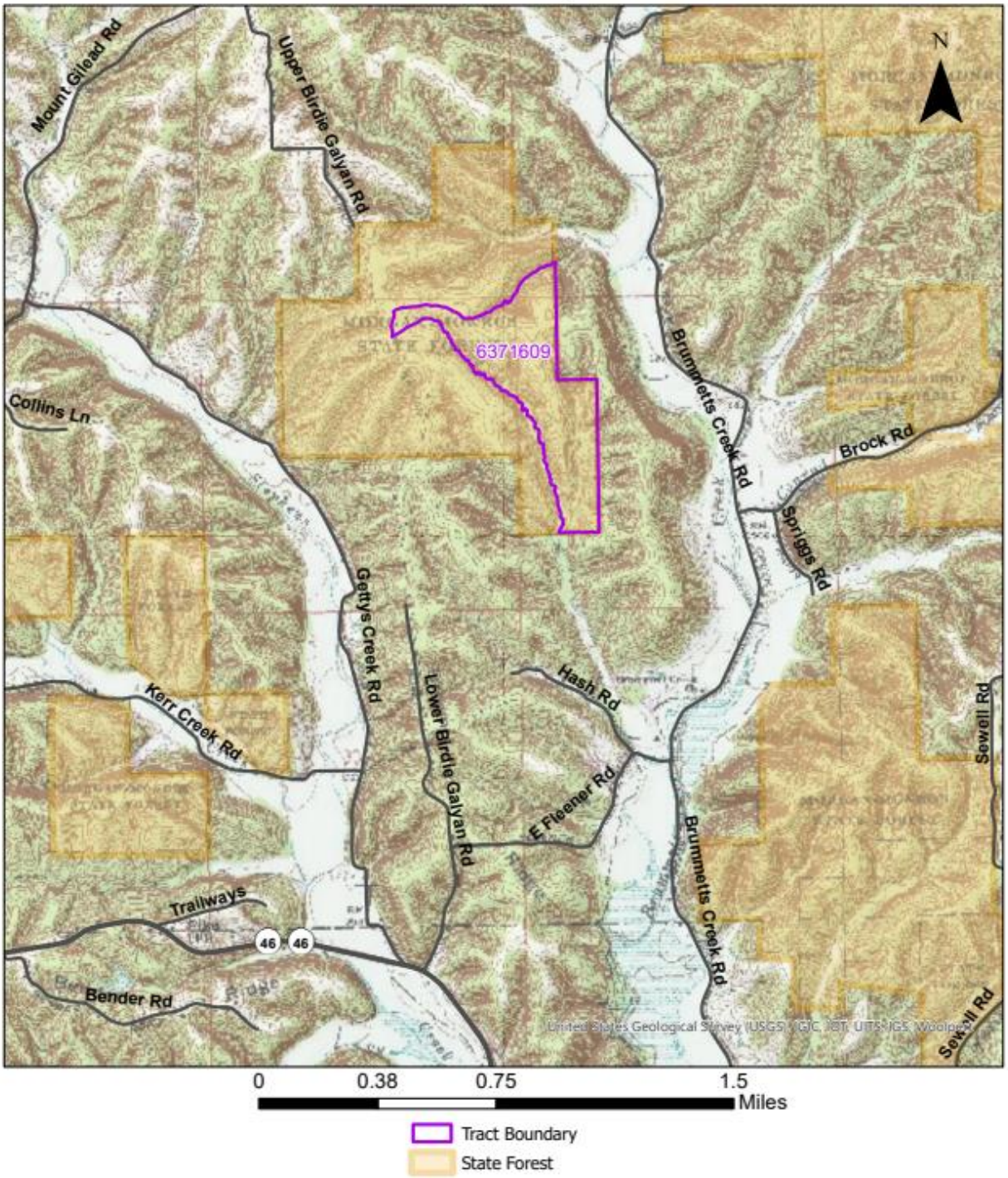
Summary Tract Silvicultural Prescription and Proposed Activities

A timber harvest is prescribed for this tract, to include portions of the oak-hickory, and conifer stratums/cover types. Estimated harvest volume would be approximately 342MBF according to inventory data. Details of management are described in the tract subdivision descriptions above. This harvest could be combined with C16T23 (6371623) and C16T24 (6371624) if practicable due to the adjacent location and common fire lane for access. The fire lane is in good shape but could use some vegetation clearing and additional gravel to improve sections for all-weather access.

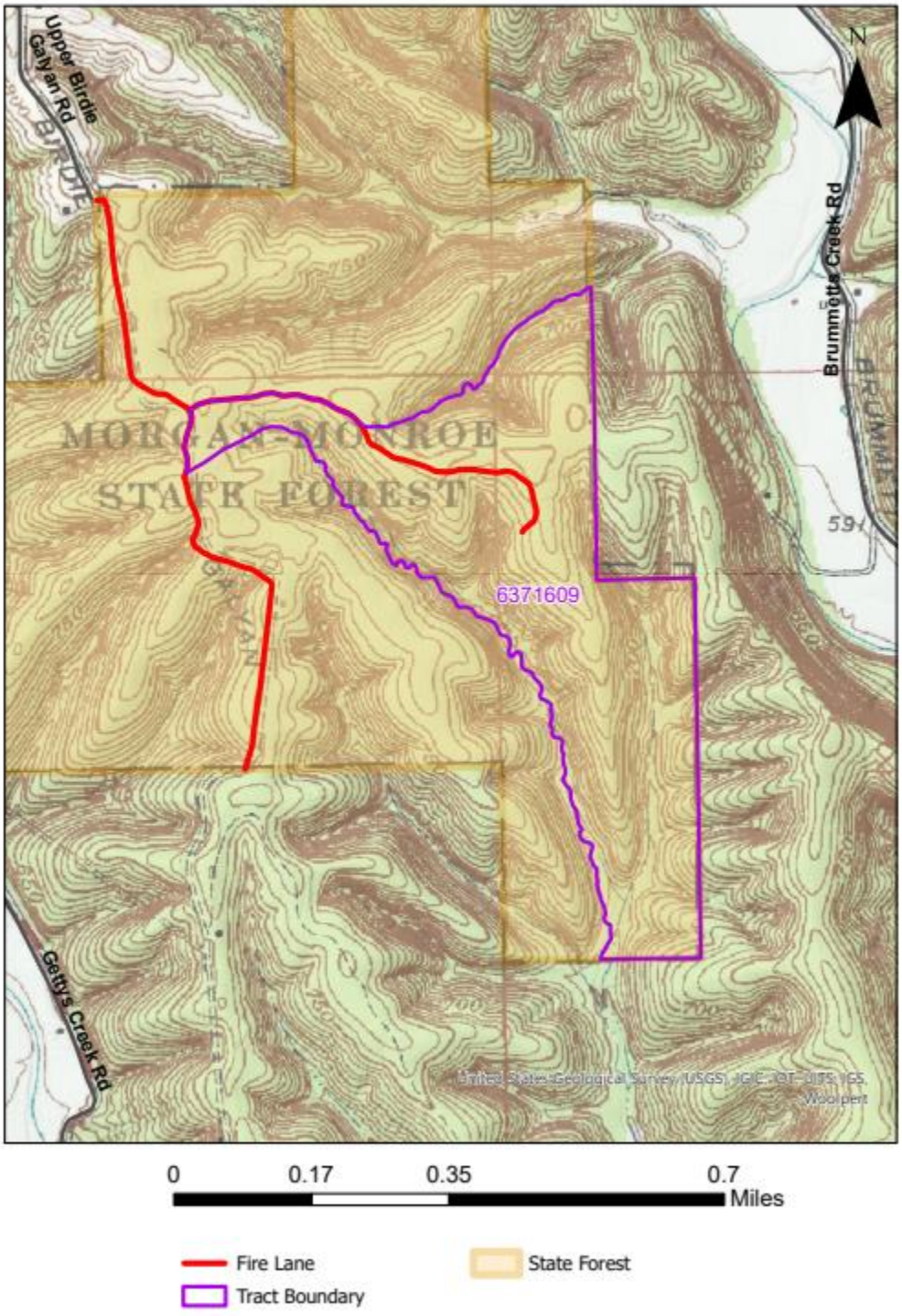
Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Road improvement work to fire lane	2024
Timber sale C16T9 with C16T23 & C16T24	2024-2028
Invasive species control	2024+
Timber Stand Improvement	2024+
Prescribed fire	2024+
Re-inventory	2043

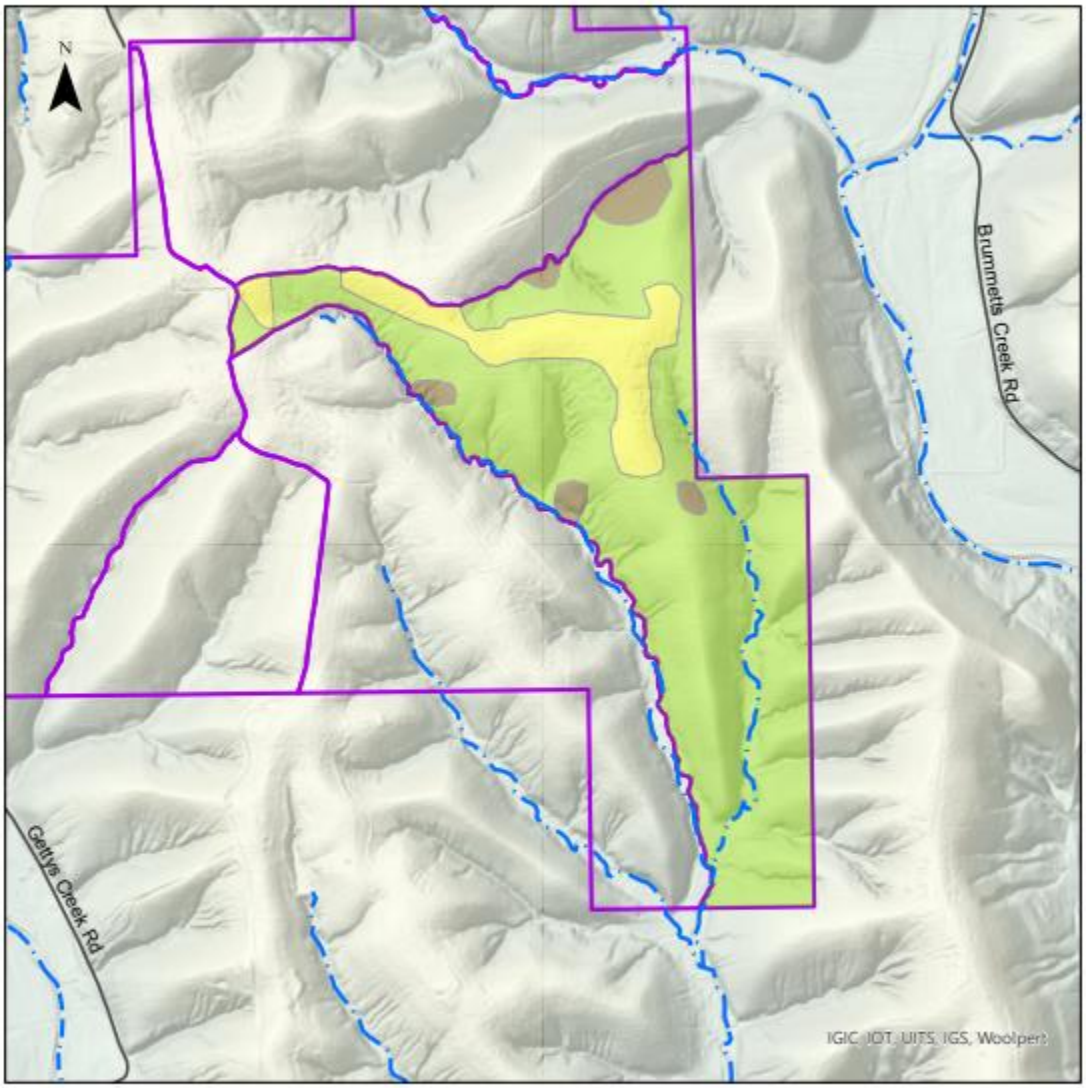
Morgan-Monroe State Forest
Compartment 16 Tract 9
Location Map



Morgan-Monroe State Forest
Compartment 16 Tract 9
Tract Map



State Forest
Compartment 16 Tract 9
Cover Types Map



State Forest: Morgan Monroe	Tract: 6371623 (compartment 16 tract 23)
Tract Acreage: 90	Forest Acreage: 90
Forester: Dave Ramey	Date: June 19, 2019
Management Cycle End Year: 2039	Management Cycle Length: 20 Years

Location

Tract 6371623 is located in Monroe County, Benton Township, Section (s) 28 – T 9 N – R 1 E. It is approximately 3.5 miles northeast of Bloomington, Indiana, and located at the end of Upper Birdie Gaylan Road.

General Description

The tract is quite diverse, covered with mixed hardwood forests and pine plantings. Other timber type(s) present include oak-hickory, and early successional mixed hardwoods.Choose an item. Choose an item.. The most recent harvest in this tract occurred in 2003.

The 2003 timber harvest was primarily an improvement cut and light thinning which focused on the removal of fire damaged and other lower quality trees. There were 2 regeneration openings created totaling 3 acres. There was no record of post-harvest timber stand improvement (TSI) being performed. The current overall timber quality within this tract is good in the oak-hickory areas, mostly on the west and south facing slopes. The mixed hardwood areas in the northern portions of the tract consist of primarily yellow-poplar and sugar maple. The Virginia pine in the northwest and central portion of the tract are slowly converting to mixed hardwoods. As a result of past efforts, the current overall timber quality within this tract is good and consists mainly of medium to large size class. The old regeneration openings are now 16 years old and contain small pole size mixed hardwoods.

History

- 1950-51 - Land Acquisitions Hartsock, Spriggs, Terrell, Mathers
- 1950's - Tree Planting: Virginia pine
- 2000 - Inventory/Cruising Kaina
- 2000 – Resource Management Guide
- 2001- TSI – contracted pre-harvest opening
- 2003 - Timber Harvest – 50,178 bd. ft. Foley Hardwoods $14,114.00
- 2004 - Best Management Practices (BMP) - Field Review
- 2019 - Inventory/Cruising
- 2019 - Resource Management Guide

Landscape Context

The surrounding landscape near the tract is predominantly closed-canopy deciduous forest. The primary block of the State Forest lies to the North, east and west. Private landownership to the north contains mixed hardwoods and to the south is croplands.

Other minor cover/habitat types present on the landscape include pine/conifer plantations, early successional forest (< 20 years old) and early-mid successional forest (<30 years old).

Landscape level forest threats include parcelization and development of private land tracts, and introduction of invasive plants that are routinely introduced during home landscaping efforts.

Topography, Geology, Hydrology

The general topography of this region consists of unglaciated, sharply dissected hills, narrow ridges and valleys. The underlying bedrock is Mississippian sandstone, shale, and siltstone.

This tract lies within the Brummett Creek-North Fork Salt Creek subwatershed. Water resources within this hydrologic boundary are part of the North Fork Salt Creek watershed.

Riparian features (intermittent streams and sinkholes) are present on portions of the tract. General riparian management zone (RMZ) guidelines will be implemented in these areas in accordance with the *2022 BMP Field Guide - Indiana Logging and Forestry Best Management Practices Field Guide.*

Soils

Typical soils in the majority of this area are moderately drained to well drained soils that formed in residuum (formed in place on bedrock). A thin layer of loess covers some of these soils. The major soils in this tract are listed below.

<u>BdB- Bedford silt loam, 2 to 6 percent slopes</u>
This gently sloping, deep, moderately well-drained soil is on uplands. There is a fragipan at 1.5-3.5 feet that can restrict root penetration. It is well suited to trees and has a site index of 70 for white oak and 90 for yellow poplar.

<u>CrC- Crider silt loam, 6 to 12 percent slopes</u>
This moderately sloping, deep, well-drained soil is on narrow and broad convex ridgetops of the uplands. It is well suited to trees. This soil has a site index of 88 for northern red oak and 97 for yellow poplar.

<u>WmC- Wellston-Gilpin silt loams, 6 to 20 percent slopes</u>
These moderately sloping to moderately steep, well drained soils are on side slopes and ridgetops in the uplands. They are well suited to trees. This complex has a site index for northern red oak of 71 in the Wellston and 80 in the Gilpin.

BkF- Berks-Weikert complex, 25 to 75 percent slopes
This complex consists of steep and very steep, moderately deep and shallow, well-drained soils on side slopes of the uplands. Erosion hazard, equipment limitations, and seedling mortality are concerns in management due to slope and depth to bedrock. These factors should be considered when planning management activities and implementing Best Management Practices for Water Quality. This complex has a site index of 70 for northern red and black oak.

Access

This tract is accessible via a cable gate and fire lane off Upper Birdie Gaylan Road. The gate is approximately 1 mile southeast of the intersection of Upper Birdie Gaylan and Mt. Gilead roads. Access within the tract is good, with no significant limitations to resource management.

Boundary

Privately owned property borders this tract to the south. Private boundaries were last reviewed and marked in 2019.

The majority of the remaining tract boundaries adjoin other State Forest tracts and are generally defined by deep ravines and mapped intermittent streams. Upper and lower Birdie Gaylan roads both dead end into this section of compartment 16.

Ecological Considerations

This tract contains diverse vegetation and wildlife resources (age, type, structure) conducive to providing habitat for a variety of wildlife species. Habitat includes:

- contiguous mixed hardwood canopy
- contiguous oak-hickory canopy
- pine plantations
- old fields/shrub-scrub areas
- riparian areas

Hard mast trees such as oaks, hickories, and American beech provide food source to squirrels, turkey, and white-tailed deer. The openings are varied in size but all present similar, dense vegetation that favors wildlife preferring this habitat structure. Such vegetative species include sassafras, grapevine, and other early successional shrubs.

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.

Inventory data for Compartment 16 Tract 23 indicates that the tract meets maintenance level guidelines for forest stand snag density in all size classes. The prescribed management will maintain or enhance the relative abundance of these features.

Below is a list of invasive species identified during the inventory. These species are prevalent throughout the county. Priority should be given to ailanthus (if found), bush honeysuckle, and autumn olive. These would be treated as soon as practical, with individuals and smaller areas being targeted if needed. A broader and/or situational approach should be taken with the other species noted below. However, these species are prevalent throughout the county and eradication is likely not feasible. Control measures for these species may include larger scale road & trailside treatment projects, planned regeneration openings, pre or post-harvest TSI projects, etc.

- Multiflora Rose
- Japanese Stiltgrass
- Autumn Olive
- Asian Bush Honeysuckle

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 or communities.

Recreation:

Although no permanently established recreation trails or developments are present in this tract, there are still several recreational opportunities.

Hunting is permitted on State Forest property, care should be taken as the tract borders private property. This area also offers opportunities for certain types of gathering and wildlife viewing.

Recreation will be given consideration during forest management activities. Where necessary use may be restricted during activities for user and worker safety reasons.

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:

Mesic Oak-Hickory – 68 acres

This cover type is predominantly mature oak-hickory with mixed hardwoods, such as yellow-poplar, sugar maple, red maple, and American beech, which are more common on north and east slopes. A mix of diameters are present, but the timber resource consists of mostly medium to large size classes. White

oak, yellow-poplar, black oak, scarlet oak and pignut hickory species account for the majority of the total volume in the stand. The mid canopy and understory are dominated by beech and maples.

Pine/Conifer – 19 acres

This cover type is currently a mixed stand of decadent planted Virginia pine and mixed hardwoods. It is located on a broad flat ridge at the north end of the tract. It is mostly pole to small size trees. The mixed hardwood component mostly consists of sassafras, yellow-poplar and maples. Quality is poor to average.

Mixed Hardwoods (Old Regeneration Openings) – 3 acres

This cover type consists of roughly 2 regeneration openings that are approximately 16 years old. Grapevines did not appear excessive and dominate regeneration includes yellow poplar, maples, blackgum, beech, and sassafras. Trees are predominantly sapling to small pole size.

Summary Tract Silvicultural Prescription and Proposed Activities

This tract is adequately stocked and a managed timber harvest is prescribed. The following silvicultural prescriptions are recommended.

Selection & Improvement/Thinning Cutting

A combination of selection and improvement cuttings are prescribed for the oak-hickory and mixed hardwood stands. The goal is to improve growth and vigor on the highest quality and most vigorous oak, hickory and mixed hardwood stems. This can be accomplished primarily through single tree selection and release thinning. Individual trees targeted for removal may include the following: competing mixed hardwoods; suppressed trees; trees damaged by past fire or grazing; wind-damaged trees; drought-stressed trees; and any other dominant or co-dominant trees that are overtopping or suppressing quality growing stock. The residual stocking in these areas should remain above the B-line (65 sqft/acre) according to the Gingrich stand density chart for upland hardwoods. Grapevine control and non-commercial thinning is recommended in the old regeneration openings.

Small group selections may be implemented in areas dominated with poor growing stock, creating a component of mixed hardwood regeneration and early successional habitat. Low thinning may also be utilized in denser, even-aged areas with large amounts of suppressed and intermediate trees that are likely to drop out from competition. This method can also be employed to reduce the density of shade tolerant species such as sugar maple, red maple, and American beech in an attempt to establish and promote advanced oak-hickory regeneration.

Pine Thinning/Improvement Cutting

Though not native to this area, pine does have aesthetic and moderate habitat value. In general, the pines that do well on our State Forest properties are eastern white pine, red pine, and Virginia pine. Due to the small size and good condition of the pine stand, it will be managed and enhanced until maturity. A free thinning is prescribed for this stand. This will include a combination of low, selection, and possibly geometric/row thinning. Individual trees targeted for removal should include the following: suppressed and intermediate trees that are likely to drop out from competition; dominant or co-dominant pine trees that are overtopping or competing with quality hardwoods, trees damaged by past fire; wind-damaged

trees; drought-stressed trees; and possibly trees that need to be removed to achieve a desired spacing or for logistical reasons.

Prescribed Fire

If time and resources allow, prescribed fire will be used as a management tool for this tract. While exact timing of the prescribed fire is dependent upon weather and fuels conditions, most burns are conducted in the fall or spring. Prescribed fire can be used as a tool in oak-hickory ecosystems to restore, maintain, and regenerate the trees, shrubs, and herbaceous layers associated with them. This restoration and maintenance will then have the effect of supporting the wildlife that depend on oak-hickory ecosystems for survival. In most Midwestern oak-hickory forests, an abundance of deer, lack of fire, and dense understory shading has and is currently causing a change in the forest. This mesophication effect is occurring due to these historically more open forests and woodlands being filled in with shade tolerant species such as sugar maple, red maple, and American beech. The result is a change in forest composition and a reduction in or total loss of the natural herbaceous and shrub layers that would have historically dominated these sites, which were subjected to periodic fires, both natural and those caused by humans. The goals of the proposed prescribed fire are to create conditions conducive to oak regeneration and recruitment while opening the mid story and understory up for the appropriate herbaceous and woody plants associated with oak-hickory ecosystems.

Timber Stand Improvement (TSI)

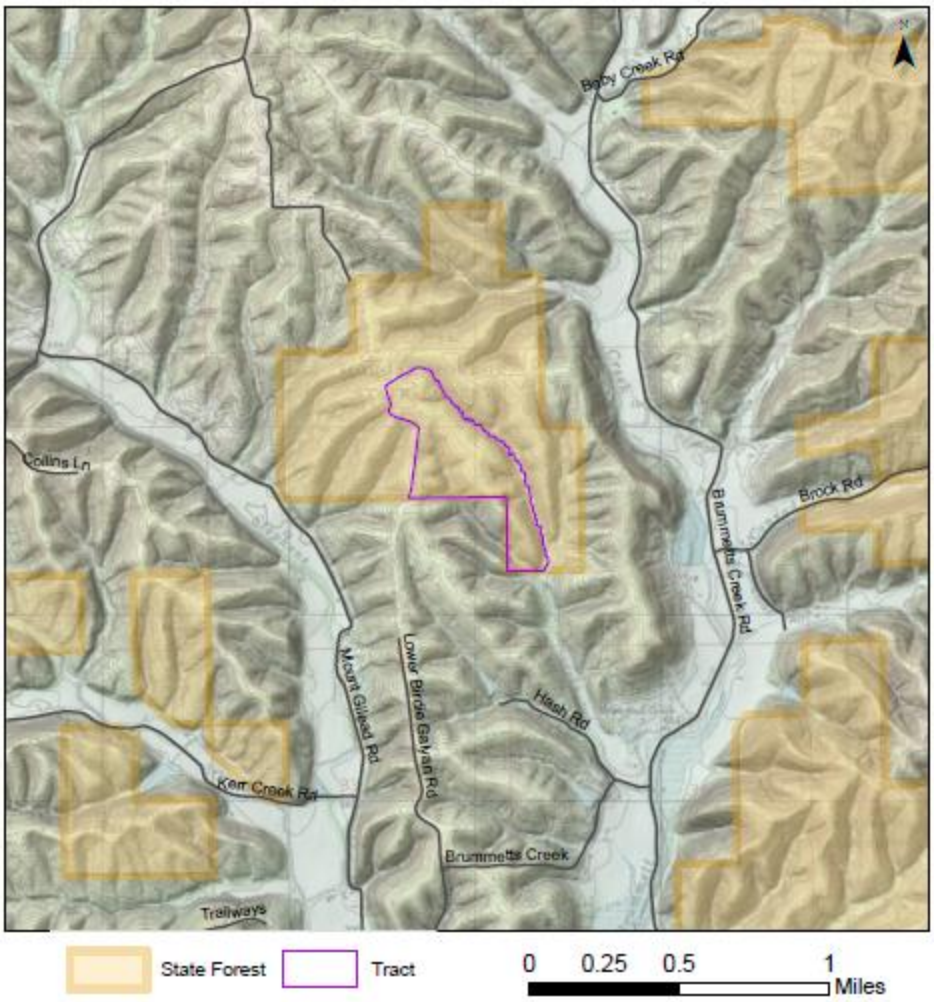
Various TSI practices are prescribed for the entire tract. The TSI should focus on releasing oaks, hickories and quality mixed hardwoods, controlling grapevines in select areas, reducing the density of shade tolerant species and potential invasive work. As the stand develops/ages, other silvicultural prescriptions may become more viable options. Below is a general guideline for this work.

- *Grapevine Control* – Pre-harvest in potential openings, post-harvest entire tract
- *Croptree Release* – Post-harvest entire tract
- *Regeneration Opening Completion* - Post-harvest
- *Large Snag Creation* - Post-harvest as part of opening completion and croptree release operations
- *Coppicing* - Post-harvest as part of opening completion operation – limited to young oaks, hickory, walnut, yellow-poplar.
- *Exotic Control* - Potential pre-harvest in openings, post-harvest as needed
- *Understory Treatment* – Pre or Post harvest in select areas within the oak-hickory stands

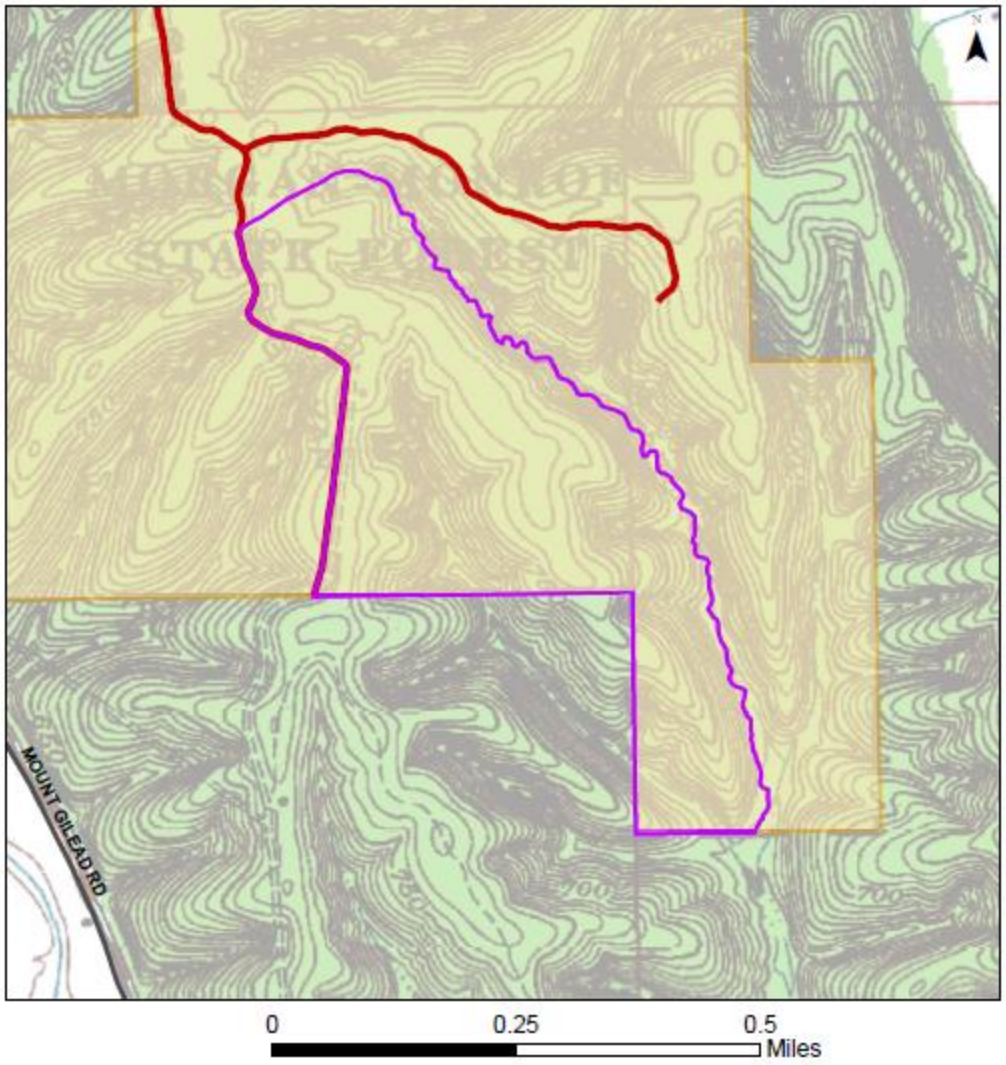
Schedule:

Proposed Management Activity	*Proposed Period*
Pre-Harvest TSI/ Invasive Treatments	2023-2024
Timber Marking	20274
Road/Landing Work	2024
Timber Sale	2024 - 2025
Timber Sale Closeout	2024-2025
BMP Review	2025
Post Harvest TSI/Invasive Treatments	2025
Regeneration Success Review	2028-2029
Reinventory and Management Guide	2039

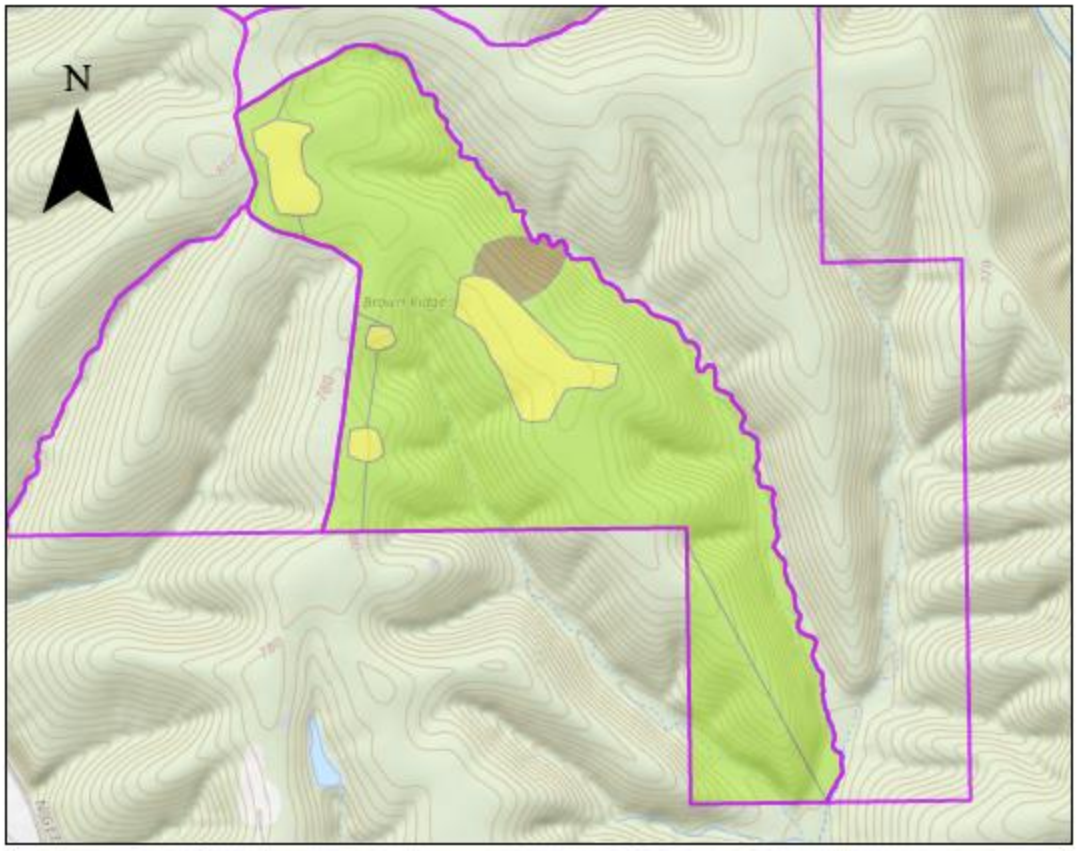
Morgan-Monroe State Forest
Location Map
Compartment 16 Tract 23



Morgan-Monroe State Forest
Compartment 16 Tract 23
Tract Map



Morgan-Monroe State Forest
Compartment 16 Tract 23
Cover Types Map



State Forest- Morgan-Monroe | Compartment 16 | Tract 24
Forester Phil Jones | Date- 2/28/2024 | Acres 41
Management Cycle End Year- 2044 | Management Cycle Length- 20 years

Location
Tract 6371624 is located in Monroe County, Benton Township, Section(s) 28 – T9N – R1E. It is approximately 3.5 miles northeast of Bloomington, Indiana, off Birdie Galyan Road.

General Description
Most of the tract is covered with hardwood forests, especially oak-hickory timber types. Other type(s) present include mixed hardwood, pine, and early successional mixed hardwood.

There is no known harvest record for this tract while under state ownership. This may be attributed to tract realignment and its size. This small tract used to be part of 6371610. There were two small timber harvests in 6371610 in 1972, however, neither of these harvests occurred in the area that is now 6371624. There was another sale in 6371610 in 2006 that covered the entire tract, but by this time 6371624 had already been split off into its own tract.

The western ridge of the tract consists of oak-hickory forest. This is mostly a mature white oak, black oak and scarlet oak stand with many quality trees. The eastern portion of the tract is similar to this area at the south end, but most of the ridge is planted Virginia and shortleaf pines. The ridgetop in this area consists of a deeply incised old roadbed, which forms the boundary with adjacent tract 6371623. The stand is typical for this type of species and age. Some of the shortleaf is larger in size and still appears somewhat vigorous, but for the most part this is a stagnant stand consisting of mostly pole to small size Virginia pine.

History
- 1950 – Land Acquisition; Terrell
- 1953 – Land Acquisition; Boyer (southwest portion)
- ca. 2001 - Miscellaneous – Split current tract from 6371610
- 2011 – Forest Inventory/Cruising; DeCosta
- 2018 – Forest Inventory/Cruising; Jones

Landscape Context

The surrounding landscape near the tract is predominantly closed-canopy deciduous forest. The primary block of the State Forest lies in every direction except to the south. Private landownerships dominate to the south with a mix of developed areas, forest and agricultural lands.

Other minor cover/habitat types present on the landscape include a pine/conifer planting.

Landscape level forest threats include parcelization and development of private land tracts, and introduction of invasive plants that are routinely introduced during home landscaping efforts.

Topography, Geology and Hydrology

The general topography of this region consists of unglaciated, sharply dissected hills, narrow ridges and valleys. The underlying bedrock is Mississippian sandstone, shale, and siltstone.

This tract lies within the Brummett Creek-North Fork Salt Creek subwatershed. Water resources within this hydrologic boundary are part of the North Fork Salt Creek watershed.

Riparian features (intermittent streams) are present on portions of the tract. General riparian management zone (RMZ) guidelines will be implemented in these areas in accordance with the *2022 BMP Field Guide - Indiana Logging and Forestry Best Management Practices Field Guide.*

Soils
Typical soils in most of this area are moderately drained to well drained soils that formed in residuum (formed in place on bedrock). A thin layer of loess covers some of these soils. A small area located on a ridgetop at the northernmost portion of the tract formed from a thin layer of loess and underlying limestone bedrock. The major soils in this tract are listed below.

BdB- Bedford silt loam, 2 to 6 percent slopes
This gently sloping, deep, moderately well drained soil is on uplands. There is a fragipan at 1.5-3.5 feet that can restrict root penetration. It is well suited to trees and has a site index of 70 for white oak and 90 for yellow poplar.

BkF- Berks-Weikert complex, 25 to 75 percent slopes
This complex consists of steep and very steep, moderately deep and shallow, well drained soils on side slopes of the uplands. Erosion hazard, equipment limitations, and seedling mortality are concerns in management due to slope and depth to bedrock. These factors should be considered when planning management activities and implementing Best Management Practices for Water Quality. This complex has a site index of 70 for northern red and black oak.

WmC- Wellston-Gilpin silt loams, 6 to 20 percent slopes
These moderately sloping to moderately steep, well drained soils are on side slopes and ridgetops in the uplands. They are well suited to trees. This complex has a site index for northern red oak of 71 in the Wellston and 80 in the Gilpin.

Access
This tract is accessible via cable gates located on both Upper and Lower Birdie Galyan roads. The north gate is approximately 1 mile southeast of the intersection of Upper Birdie Gaylan and Mt. Gilead roads. The south gate is approximately 1.7 miles north of the intersection of Lower Birdie Gaylan and State Road 46. Access within the tract is good, with no significant limitations to resource management.

Boundary
Privately owned property serves as the southern tract boundary. This state boundary line was last reviewed and marked in 2018.

The majority of the remaining tract boundaries adjoin other State Forest tracts and are generally

defined by a deep ravine and an old roadbed.

Ecological Considerations

This tract contains diverse vegetation and wildlife resources (age, type, structure) conducive to providing habitat for a variety of wildlife species. Habitat includes:

- contiguous oak-hickory canopy
- scattered mixed hardwood stands
- pine plantations
- riparian areas

Hard mast trees such as oaks, hickories, and American beech provide food source to squirrels, turkey, and white-tailed deer. The openings are varied in size but all present similar, dense vegetation that favors wildlife preferring this habitat structure. Such vegetative species include sassafras, grapevine, and other early successional shrubs.

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.

Inventory data for Compartment 16 Tract 24 indicates that the tract exceeds maintenance level guidelines for forest stand snag density in all size classes. The prescribed management will maintain or enhance the relative abundance of these features.

Below is a list of invasive species identified during the inventory. These species are prevalent throughout the county. If identified, priority control should be given to ailanthus, bush honeysuckle, and autumn olive. These would be treated as soon as practical, with individuals and smaller areas being targeted if needed. A broader and/or situational approach should be taken with the other species noted below. However, these species are prevalent throughout the county and eradication is likely not feasible. Control measures for these species may include larger scale road & trailside treatment projects, planned regeneration openings, pre or post-harvest TSI projects, etc.

- Multiflora Rose
- Japanese Stiltgrass
- Autumn Olive

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 or communities.

Listed below are the general community types found in this tract.

Dry-mesic upland forest
Dry-mesic upland forests are one of the most prevalent forest communities in Indiana. This community occupies an intermediate position along a soil moisture gradient. Trees grow well, but the canopy is usually more open than in mesic forests.

The dominant trees found are white oak, red oak, and black oak. Other plants and animals characteristic of this community are: shagbark hickory, mockernut hickory, flowering dogwood, hop hornbeam, blackhaw, broad-headed skink, white-footed mouse, eastern chipmunk.

Mesic upland forest
Mesic upland forests are found throughout the state, but are most common in hilly regions where slopes and aspect reduce excessive evaporation and wildfire. They generally occur on north-facing slopes, in ravines, and on level soil with moderately high available moisture. Ideal soil moisture conditions tend to result in dense overstories and, in undisturbed stands, an understory of shade-tolerant species.

Sugar maple, American beech, yellow-poplar, red oak, and basswood are the typical dominant trees in a mesic upland forest. Other plants that are found in this community include pawpaw, Ohio buckeye, blue beech, bitternut hickory, red mulberry, and bladdernut. Tiger salamanders, wood frogs, and wood thrushes are some animals commonly found.

Recreation
Although no permanently established recreation trail or developments are present in this tract, there are still several recreational opportunities. Hunting is permitted on State Forest property and this area also offers opportunities for certain types of gathering and wildlife viewing.

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

Tract Subdivision Description and Silvicultural Prescription
This tract has two management cover types (stands). Below is a list, approximate acreages, general stand descriptions and silvicultural prescriptions.

Oak-Hickory/Mixed Hardwood – 35.5 acres
The cover type is predominantly mature oak-hickory with mixed hardwoods, such as yellow-poplar, sugar maple, red maple, and American beech, more common on north and east slopes. A mix of diameters are present, but the timber resource consists of a mostly medium to large size class. White oak, black oak, maples, beech and scarlet oak account for the majority of the total volume in the stand. The mid canopy and understory are dominated by beech and maples.

Virginia Pine – 5.5 acres
The cover type is currently a mixed stand of decadent planted Virginia pine and mixed hardwoods. It is located on a broad flat ridge at the north end of the tract. It is mostly pole to small in size. The mixed

hardwood component mostly consists of sassafras, yellow-poplar and maples. Quality is poor to average.

Summary Tract Silvicultural Prescription and Proposed Activities

This tract is well stocked and a managed timber harvest is prescribed. The following silvicultural prescriptions are recommended.

Selection & Improvement/Thinning Cutting

A combination of selection, improvement and thinning cuttings are prescribed in the oak-hickory areas. The goal is to improve growth and vigor on the highest quality and most vigorous oak, hickory and mixed hardwood stems. This can be accomplished primarily through single tree selection and release thinning. Individual trees targeted for removal may include the following: competing mixed hardwoods; suppressed trees; trees damaged by past fire or grazing; wind-damaged trees; drought-stressed trees; and any other dominant or co-dominant trees that are overtopping or suppressing quality growing stock. The residual stocking in these areas should remain above the B-line (70 sqft/acre) according to the Gingrich stand density chart for upland hardwoods.

Low thinning may also be utilized in denser, even-aged areas with large amounts of suppressed and intermediate trees that are likely to drop out from competition. This method can also be employed to reduce the density of shade tolerant species such as sugar maple, red maple, and American beech in an attempt to establish and promote advanced oak-hickory regeneration.

Large Regeneration Opening

A conversion of the Virginia pine area from an understocked, poor quality stand to an early successional, native mixed hardwood stand is prescribed. This should be accomplished primarily through an even-age silvicultural method. Initial estimates show that it could be around 15.5 ac. Any vigorous, desirable hard mast producing trees such as black walnut, oaks and hickories may be left for wildlife. These can be a valuable food source as well as important perch sites for raptors. Grapevines and invasive species can severely inhibit regeneration and growth and should be controlled prior to harvesting. A dense understory of spicebush can also limit the success of the opening and should be controlled as well.

Prescribed Fire

If time and resources allow, prescribed fire will be used as a management tool for this tract. While exact timing of the prescribed fire is dependent upon weather and fuels conditions, most burns are conducted in the fall or spring. Prescribed fire can be used as a tool in oak-hickory ecosystems to restore, maintain, and regenerate the trees, shrubs, and herbaceous layers associated with them. This restoration and maintenance will then have the effect of supporting the wildlife that depend on oak-hickory ecosystems for survival. In most Midwestern oak-hickory forests, an abundance of deer, lack of fire, and dense understory shading has and is currently causing a change in the forest. This mesophication effect is occurring due to these historically more open forests and woodlands being filled in with shade tolerant species such as sugar maple, red maple, and American beech. The result is a change in forest composition and a reduction in or total loss of the natural herbaceous and shrub layers that would have historically dominated these sites, which were subjected to periodic fires, both natural and those caused by humans. The goals of the proposed prescribed fire are to create conditions conducive to oak regeneration and recruitment while opening the mid story and understory up for the appropriate herbaceous and woody plants associated with oak-hickory ecosystems.

Timber Stand Improvement (TSI)

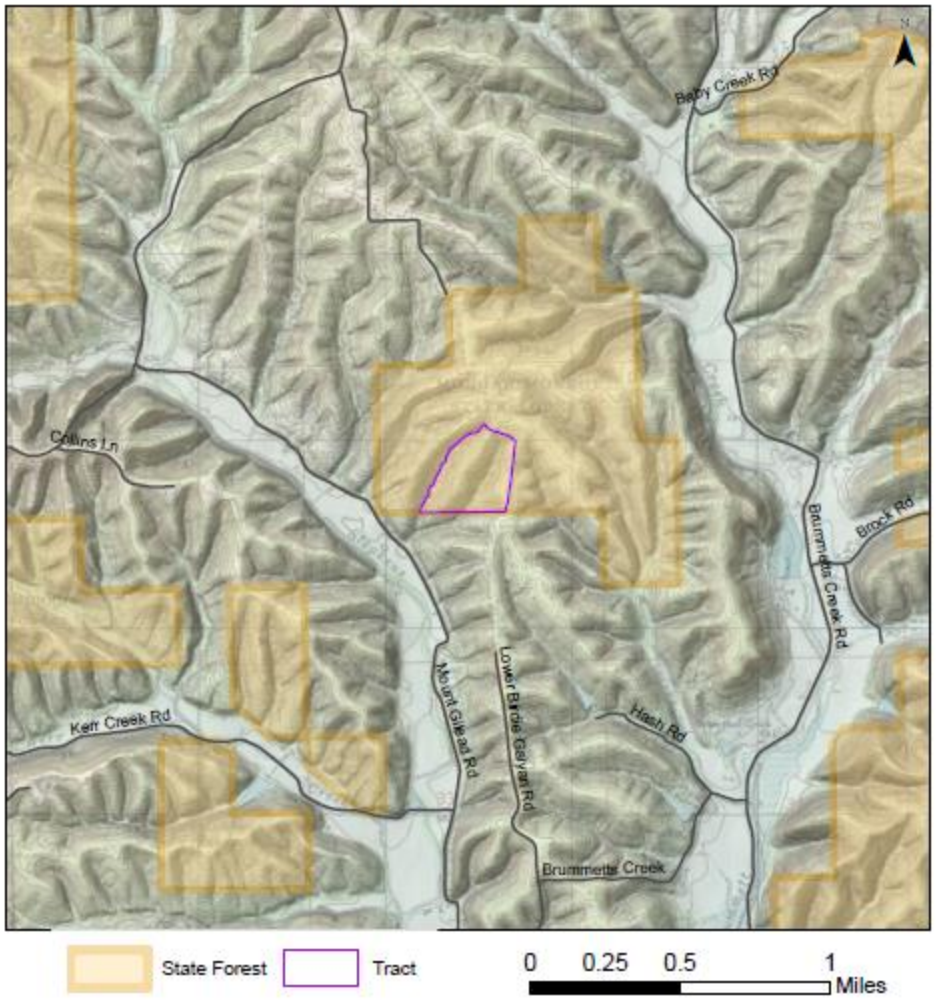
Various TSI practices are prescribed for the entire tract. The TSI should focus on releasing oaks, hickories and quality mixed hardwoods, controlling grapevines in select areas, reducing the density of shade tolerant species and potential invasive work. As the stand develops/ages, other silvicultural prescriptions may become more viable options. Below is a general guideline for this work.

- *Grapevine Control* – Pre-harvest in potential openings, post-harvest entire tract
- *Croptree Release* – Post-harvest entire tract
- *Regeneration Opening Completion* - Post-harvest
- *Large Snag Creation* - Post-harvest as part of opening completion and croptree release operations
- *Coppicing* - Post-harvest as part of opening completion operation – limited to young oaks, hickory, walnut, yellow-poplar.
- *Exotic Control* - Potential pre-harvest in openings, post-harvest as needed
- *Understory Treatment* – Pre or Post harvest in select areas within the oak-hickory stands

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Pre-Harvest TSI/ Invasive Treatments	2024-2028
Timber Marking	2024
Road/Landing Work	2024
Timber Sale	2025
Timber Sale Closeout	2025-2026
BMP Review	2025-2026
Post Harvest TSI/Invasive Treatments	2026
Regeneration Success Review	2028-2030
Reinventory and Management Guide	2044

Morgan-Monroe State Forest
Location Map
Compartment 16 Tract 24



Morgan-Monroe State Forest
Compartment 16 Tract 24
Tract Map

Morgan-Monroe State Forest
Compartment 16 Tract 24
Cover Types Map