

**Resource Management Guides
Martin State Forest
30-day Public Comment Period (April 10, 2024 – May 9, 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 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 Martin State Forest.

Compartment 3 Tract 7
Compartment 6 Tract 5
Compartment 6 Tract 6
Compartment 7 Tract 12

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.

Martin State Forest
Bailey McIntire/Alex Gust
Management Cycle End Year 2041

Compartment 3
Date: 6/14/2021
Management Cycle Length 20 Years

Tract 7
127 acres

Location

This tract, also known as 6360307, is located on the south side of Williams Road in Martin County, Indiana. The eastern boundary of the tract is the Martin-Lawrence County line. The town of Shoals, Indiana, is approximately 7 miles southwest.

General Description

The entirety of this tract is forested. Within the tract the acreage is split between two cover types, mesic oak hickory, and mixed hardwoods. The pine planting on the ridgetop has begun transitioning to more of a mixed hardwood cover type with some pine.

History

- November 1965 – land acquisition of 20 acres in the northeast corner of the tract from Ruth Maulding. Book 100, page 243.
- April 1967 – tree planting in tracts 6, 7, and 8. A total of 44,000 pine (eastern white, shortleaf, pitch, and red) and 2,000 black locusts, were planted, but unknown by tract. Also, unknown if this was all on the 20 acres or on some of the forest service land acquired in the following year.
- October 1968 – Most of the land in this tract was acquired from the U.S. Forest Service in a land trade. The Forest Service acquired the land from two sellers. Hattie Pickens sold the southwest quarter of the northeast quarter of Section 36 on October 7, 1940. This transaction is recorded in Deed Record Book 81, page 272. Frank and Rachel Mundy sold what is the remainder of the tract on June 1, 1940. That acquisition is recorded in Deed Record Book 81, pages 135-136.
- April 1973, the first forest inventory was conducted by Bill Hahn. Inventory information indicated that 80 acres of the total tract was in merchantable timber and little evidence of fire or past timber harvests. Inventory data indicated 226,880 board feet, 2,836 board feet/acre. Species breakdown by volume was not recorded.
- May 1981, a forest inventory was conducted by Janet Eger. Inventory data indicated a total volume of 351,205 board feet, 3,027.6 board feet/acre. The top three species by volume were black oak, white oak, and yellow poplar. During the inventory an abandoned residence was located on the southeast part of the tract, and it was determined that the residence and some adjacent land was not state owned.
- In 1981, the fire lane starting at the county road to the south end of the tract was rerouted from heading west out of the tract to northeast providing better access to part of the tract and tract 5 to the north.
- In March 1981, approximately 1.5 acres was planted to a mixture of black locust and European black alder.
- In February 1983, a timber harvest was conducted on the western part of the tract totaling 72 acres. Approximately 134,638 board feet sold for \$18,035.00. The top three species by volume were black oak, yellow poplar, and red oak.
- In April 1984, post-harvest timber stand improvement (TSI) was completed.

- In November 1987, a timber harvest was conducted on the eastern part of the tract totaling 56 acres. An estimated 124,681 board feet sold for \$28,210.00. The top three species by volume were black oak, white oak, and yellow poplar.
- In January 1989, post-harvest TSI was completed.
- In October 2004, a forest inventory was conducted by Jim Lauck. Inventory data indicated a total volume of 1,017,510 board feet, 7,166 board feet/acre. The top three species by volume were black oak, yellow poplar, and white oak.
- Spring 2006, vine control TSI was completed by property staff.
- In November 2006, a timber harvest was conducted. Approximately 299,030 board feet sold for \$115,125.00. The top three species by volume were black oak, yellow poplar, and white oak.
- In 2012, eastern white pine areas were thinned through TSI.

Landscape Context

Land in the area is primarily forested. Land level enough to be used for agriculture is generally open and planted to row crops, hay, or pasture. There is the occasional residential home, but little development has occurred nearby, and no major change is anticipated for this area.

Topography, Geology and Hydrology

Most of the tract is on a western or northern aspect, being the side slope of a major southwest to northeast running ridge. There is one major drainage that runs northwest along the northern tract boundary that becomes a mapped intermittent near the intersection with another mapped intermittent along the western boundary that also runs to the north. The ridge has a broad, flat top that had been farmed but now planted to red and white pine. Part of the ridgetop was not planted and has naturally transitioned to hardwoods. From the drainage to the north side of the tract water flows westerly to the White River. There is a small man-made pond on the east side of the tract, approximately 20 feet in diameter and holding water during the forest inventory field work.

Soils

Most of the soils within this tract is Wellston Tipsaw Adyeville complex, 18-70 percent slopes. The ridgetop is primarily Apalona-Zanesville silt loams, 2 to 6 percent slopes. With some Wellston silt loam, 6 to 12 percent slopes making up the remaining area on the ridgetop. Down along the mapped intermittent stream in the north of the tract is Gatchel loam, 1 to 3 percent slopes.

WpfG – Wellston Tipsaw Adyeville complex, 18 to 70 percent slopes

This severe sloping, moderately deep, moderate to excessively drained soils is on side slopes.

WhfC2 - Wellston silt loam, 6 to 12 percent slopes

This moderately sloping, well drained soils is on narrow ridgetops and on side slopes of the uplands. Well suited for trees. The soil has a site index of 81 for red oak and 90 for yellow poplar.

GacAW - Gatchel loam, 1 to 3 percent slopes

This is a near level, excessively deep, well drained flood plan soil. Soil is occasionally flooded, very brief duration, and be taken into management plan consideration. No site index was present for this soil.

AgrB - Apalona-Zanesville silt loams, 2 to 6 percent slopes

This is a gradual sloping, moderately drained soil found on uplands and upper side slopes. The fragipan can limit rooting depth. This soil has a site index of 70 for white oak and 88 for yellow poplar.

Access

The tract has excellent access from an old county road that runs the entire length of the southeast boundary. A fire lane (fire lane 3A) provides access into the tract from the county road. The fire lane runs in a northwesterly direction and exits the tract at the northern tract boundary. An older less used fire lane leaves the county road at the southern end of the tract and runs north a short distance through the pine stand.

Boundary

Beginning from the northeast corner of the tract and moving clockwise the tract boundary goes south along the county line until it reaches the county road. This section of boundary also serves as the state forest boundary line. From the county road, the southeast tract boundary follows the road south until it reaches private property. The tract boundary then turns northwest for a short distance before it turns southwest and continues until it reaches the tract boundary line on the next ridge. Next, the tract boundary runs west to northwest until it reaches a westerly drainage which the line follows until it reaches a northerly drainage. The tract boundary follows the drainage to the main intermittent stream in the northwest corner of the tract. The tract boundary follows the main drainage east until it reaches the northeast corner of the tract. Most boundaries for this tract are distinct. The tract boundary line that runs along the county line was painted in 2016 and has two known corner stones.

Ecological Considerations

Wildlife use this tract heavily and many species were observed during the inventory. Those observed were eastern wild turkey, white-tailed deer, fox and red squirrels, chipmunks, various songbird species, red-tailed hawks, and some turkey vultures. The rock bluffs and outcrops provide unique wildlife habitat and will be maintained as they are by avoiding or buffering during management activities. There are numerous mast-producing trees on the tract, especially hard mast. Several den trees or potential den trees were observed during inventory field work. This tract has some old openings providing some early successional forest habitat, but the area could benefit from more of this underrepresented habitat type. There is a wildlife pond within this tract. This small man-made pond is approximately 20 feet in diameter and was holding water during the inventory field work. This wildlife pond will be maintained and perhaps enhanced with the prescribed management. Riparian area management will follow the guidance of the 2022 BMP Field Guide.

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.

This tract is almost evenly split between the two cover types. Mesic oak-hickory and mixed hardwood community with the mixed hardwood areas in the lower portions by ephemeral drainages and where the pine is converting to hardwoods.

The overstory in the mesic oak-hickory cover type is mostly black oak with a good representation of species such as white oaks, yellow poplar, red oak, and some hickory species (shagbark and bitternut.) The mid story has a good mix of white oak and pignut hickory with some black oak and shagbark hickory present as well. Regeneration openings created during the 2007 harvest are dominated by yellow poplar with briars in the understory. Throughout the tract there are some oak saplings, but it is mostly dominated by red and sugar maple, American beech, and white ash. The non-woody community is a mixture of species commonly associated with this cover type which includes but not limited to, green brier, viburnum, and blackberry.

The mixed hardwood cover type overstory is dominated by yellow poplar with sugar and red maple, American beech, eastern white pine, and some oak species (white, black, and red), and pignut hickory mixed in. The midstory is mostly red and sugar maple, American beech, with a few pignut hickory and white oaks. The understory is mostly sugar maple and American beech with some white ash, white oak, and black oak. The non-woody community is a mixture of species commonly associated with this cover type which includes but not limited to, spicebush, viburnum, and various species of grasses.

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 within the tract. Recreational use is mostly hunting based on the presence of observed hunting stands.

Cultural

This tract was reviewed for cultural sites during the forest resource inventory. 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

A current forest resource inventory was completed on 06/14/2021 by Resource Management Technician Bailey McIntire. A summary of the estimate tract inventory results is in the tables below.

This tract can be split into two cover types, mesic oak-hickory, and mixed hardwood.

Mixed Hardwood - 60 acres

**Mixed Hardwood Summary Data
(Trees > 11" DBH)**

| Category | Estimate |
|-------------------------------|----------|
| Stand Acres (Forested) | 60 |
| Gingrich Stocking Percent (%) | 50 |
| Trees Per Acre | 57 |
| Basal Area Per Acre (SQFT) | 64.5 |
| Volume Per Acre (BDFT) | 5,725 |

Stand Summary Data (Trees > 11" DBH)

| Species | # Sawtimber Trees | Estimated Total Bd. Ft. |
|-------------------|-------------------|-------------------------|
| Yellow Poplar | 567 | 178,350 |
| Sugar Maple | 190 | 41,010 |
| Bitternut Hickory | 75 | 24,920 |
| Red Pine | 63 | 18,190 |
| White Oak | 37 | 18,070 |
| Red Maple | 60 | 14,850 |
| American Beech | 100 | 13,890 |
| American Sycamore | 22 | 11,700 |
| Chinkapin Oak | 24 | 8,070 |
| Northern Red Oak | 6 | 5,970 |
| Honeylocust | 8 | 3,570 |
| Pignut Hickory | 12 | 3,410 |
| Red Elm | 15 | 1,480 |
| Total | 1179 | 343,480 |

Inventory data for this cover type estimates a total volume of 343,480 board feet (BF) with a suggested removal of 42,464 – 69,004 BF through a timber harvest. The midstory is predominantly yellow poplar, red and sugar maple, and American beech. In the understory it is mostly red and sugar maple and American beech with some white ash present. The old pine planting has a good composition of oak seedlings in the understory that would greatly benefit from management that reduces competition and releases them to advance. This could be accomplished by creating a regeneration opening and incorporating a prescribed fire regime. The goal being to reduce the amount of shade tolerant maple and beech saplings while improving ground conditions for seed germination and survival, focusing mainly on areas that are identified to have the greatest potential for oak and hickory regeneration. There are some low-quality maple and beech with low basal area (BA) that were identified in the inventory to be good locations for regeneration openings. The goal in these openings would be to promote species that are less shade tolerant. These openings would be established when the improvement harvest is

conducted in the oak-hickory cover type within the same tract. With these openings, some of the denser, primarily yellow poplar, areas will also be marked for an improvement harvest focusing on poor quality, damaged, low vigor, and poor health trees to improve the overall health of the stand and to release the better-quality trees. There were multiflora rose in a few locations that need treated prior to the timber harvest to reduce their abundance and minimize the potential for spreading.

Mesic Oak-Hickory- 67 acres

**Mesic Oak-Hickory Summary Data
(Trees > 11" DBH)**

| Category | Estimate |
|-------------------------------|----------|
| Stand Acres (Forested) | 67 |
| Gingrich Stocking Percent (%) | 63 |
| Trees Per Acre | 64 |
| Basal Area Per Acre (SQFT) | 78.8 |
| Volume Per Acre (BDFT) | 6,634 |

Stand Summary Data (Trees > 11" DBH)

| Species | # Sawtimber Trees | Estimated Total Bd. Ft. |
|-------------------|-------------------|-------------------------|
| Black Oak | 313 | 116,030 |
| White Oak | 328 | 100,740 |
| Yellow Poplar | 85 | 40,740 |
| Northern Red Oak | 92 | 39,490 |
| Bitternut Hickory | 121 | 30,910 |
| Shagbark Hickory | 126 | 29,310 |
| Chinkapin Oak | 137 | 16,610 |
| American Beech | 63 | 12,790 |
| Pignut Hickory | 81 | 11,590 |
| Red Elm | 20 | 5,700 |
| Sugar Maple | 20 | 3,870 |
| Sassafras | 13 | 3,670 |
| Total | 1399 | 411,450 |

Inventory data for this cover type estimates a total volume of 411,450 board feet (BF) with a suggested removal of 48,720-73,080 BF through a timber harvest. The midstory is predominantly black and white oak followed by yellow poplar with a few red oak and hickories (bitternut and shagbark). Some sugar and red maple are present in the midstory as well. The understory is dominated by red and sugar maple and American beech. There are some oak and hickory saplings present but far fewer and more scattered. With some parts of the canopy now closed the midstory oak and hickory are starting to decline as the overstory crowns have restricted sunlight while expanding to close the gaps. This portion of the tract could benefit from an improvement harvest releasing midstory oak and hickory, while capturing mortality in some of the larger black oak, which show signs of decline. The harvest would focus on poor quality, damaged, low vigor, and poor health trees. Prior to or shortly after the timber harvest the use of

prescribed fire would reduce leaf litter thickness and maple and beech presence in the understory making conditions more favorable for germination, growth, and development of oak and hickory.

The area would benefit from post-harvest TSI which would focus on releasing trees from competition and complete regeneration openings established during the harvest. TSI work would focus on removing poor form/vigor stems not removed through the timber harvest, thus releasing healthier, better-quality trees in the midstory and understory.

Summary Tract Silvicultural Prescription and Proposed Activities

Both cover types could benefit from an improvement harvest with some locations suitable for regeneration openings, patch cuts/group selection, or shelterwood cut to promote less shade tolerant species. An estimated 91,184-142,084 BF would be removed. Prior to the recommended timber harvest, there are some TSI needs to address vines in the mixed hardwood cover type and in the old regeneration openings created during the 2007 timber harvest. Within two years after the timber harvest, TSI should be conducted to complete any openings established and reduce the shade tolerant understory in areas where oak and hickory regeneration is favorable. An inspection 3-5 years after the harvest should be completed where regeneration openings were established to identify any additional TSI or invasive treatment needs. The evaluation should be done every 5-10 years after the initial evaluation to closely monitor the regeneration and any invasive species that may become established. Also, every year the fire lanes should receive routine maintenance as staff permits to maintain accessibility. In 2041 this tract will need to be inventoried and a new management guide will need to be written for future management.

Soils/Hydrology: Management activities conducted on this tract will abide by State established BMP's to minimize the impacts of the management on soils and hydrology.

Wildlife: Activities prescribed for this tract will maintain habitat for wildlife and even enhance habitat for some species that require a range of forested habitat, for example closed canopy and early successional through management. Also, for bats the number of snags will increase through TSI and use of prescribed fire.

Recreation: Recreation within the tract will be suspended during activities that could pose a risk of injury to the public. Overall, with the management planned on this tract it will enhance hunting recreation due to improving the health of the tract which will increase hard mast.

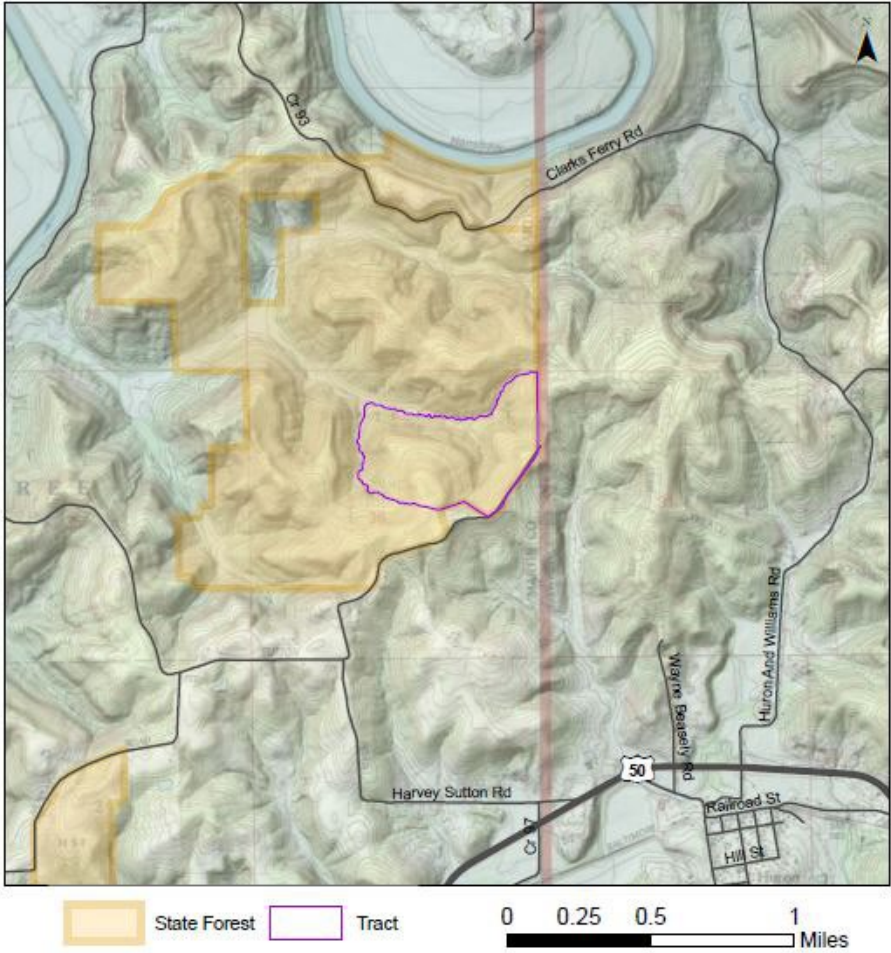
Proposed Management Activity

Pre-Harvest TSI/invasive work
Timber Harvest
Post-Harvest TSI Including Invasives
Prescribed Fire Regime
Regeneration opening monitoring
Inventory and new guide

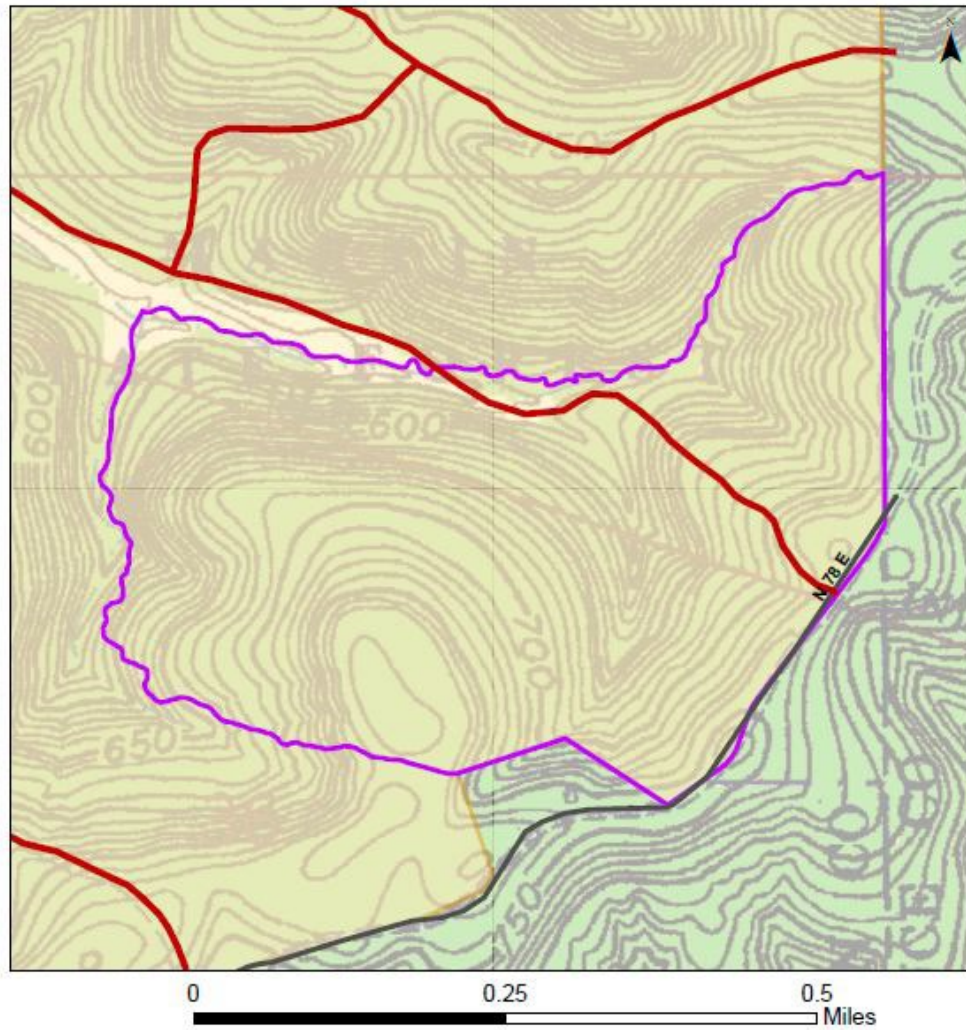
Proposed Date

2023-2024
2024-2026
1-2 Years after Harvest
At least 1 Year after TSI
3 years post-harvest
2040-2042

Location Map
Compartment 3 Tract 7

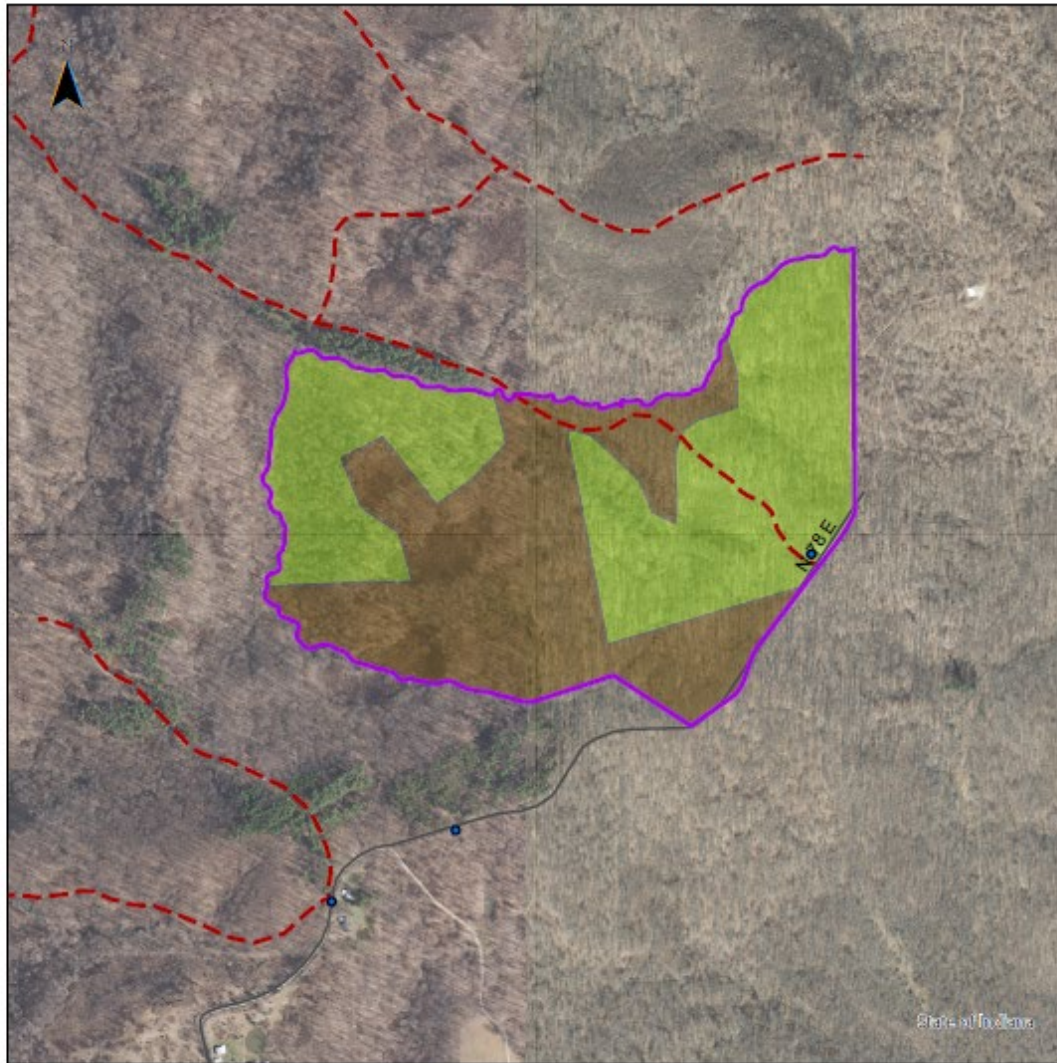


Martin State Forest
Compartment 3 Tract 7
Tract Map



- Fire Lane
- Tract boundary
- State Forest

Martin State Forest Compartment 3 Tract 7 Cover Types Map



Martin State Forest
Alex Gust/Bailey McIntire
Management Cycle End Year 2041

Compartment 6
Date: 7/7/2021
Management Cycle Length 20 Years

Tract 5
129 Acres

Location

This tract, also known as 6360605, is in the Northwest quarter of Section 13 and 14, T-3N, R-3W, of Martin County, Indiana, in Martin State Forest and is approximately 5 miles Northeast of Shoals, Indiana.

General Description

This is a forested tract mostly of mesic oak-hickory cover type with some mixed hardwood. The mixed hardwood cover type is mostly along the bottom by the mapped intermittent stream and along the ephemeral streams on the northern aspect.

History

- The USDA originally acquired this property in 1939. It was purchased after a tax auction in 1937 produced no bids. The land had belonged to James H. Brannon, who failed to make his contract payments.
- The land was then transferred to the State of Indiana in 1966 through a land exchange with the U.S. Forest Service.
- The first forest inventory was conducted by Ben Hubbard with no specific date on record, but ca. 1977. An estimated 156,612 board foot (BF) doyle, 1,506 BF/acre.
- In 1997, the tract boundaries were modified due to the transfer of 7 acres from tract 3 and ~21 acres in the southeast corner of this tract transferred to tract 6.
- In 1999, a forest inventory was conducted by Jim Lauck estimating 1,052,530 BF doyle, 8159BF/acre. The top three species by volume were white oak, black oak, and pignut hickory.
- In 2002, a timber harvest occurred where 479 trees containing an estimated 98,300 BF was sold for \$35,611.00
- Post-harvest TSI was conducted in 2004.
- In 2012, a forest inventory was conducted by Abe Bear which reported an estimated volume of 950,860 BF, 7,371 BF/acre. The top three species by volume were black oak, yellow poplar, and white oak.

Landscape Context

The primary land use in the area is timber production. This tract is part of a larger block of Martin State Forest. The tract (6360603) to the northwest contains the 60-acre Tank Spring Nature Preserve. A large block of land to the north and east is privately owned by one individual. It is primarily used for timber production and managed as open grassland. The only developed land in the area is the US Gypsum plant to the south and scattered residential areas.

Topography, Geology and Hydrology

This tract contained mostly northern aspect slopes with some south facing slopes in the far northern portion of the tract. It also has some western facing slopes along the west boundary line and a mapped intermittent stream. The entire tract drains into Beaver Creek through two drainages.

Soils

The Wellston, Berks, Gilpin Complex 18-70% slopes:

typically, deep, well drained soils, with moderate to moderately rapid permeability. Available water capacity is high in the Wellston, very low in the Berks and low in the Gilpin. Organic matter content is low to moderate. This complex covers about ninety-nine acres.

Wellston Silt Loam, 6-12% slopes:

occurs on the gentler slopes. It is a deep, well-drained soil with a high available water capacity. Permeability is moderate. This soil covers about sixteen acres.

Zanesville Silt Loam, 6-12% slopes:

eroded, is a moderately sloping, deep, well drained to moderately well drained soil. Available water capacity is moderate, and permeability is moderate above the fragipan and slow in the fragipan. This soil covers about seven acres on this tract.

The Zanesville Silt Loam 2-6% slopes:

deep, well-drained soil. Available water capacity is moderate, and permeability is moderate above the fragipan and slow in the fragipan. Surface runoff is medium. The fragipan often results in the soil being saturated in the winter and spring. This soil occurs on the main ridgetop and covers around six acres.

Access

This tract has excellent road access from fire lane 6A which runs along the main ridge at the southeast boundary of the tract.

Boundary

Fire lane 6A forms the eastern portion of the south tract boundary. The east tract boundary also serves as the state forest property line and is marked in orange paint. No evidence exists at the point where the property line turns to run north from the southeast boundary. However, there is some evidence of fence and fence row grown trees along this line. The northeast corner is very ambiguous. The line turns to run west and is poorly defined along the private property line. Bits of fence and portions of a stone fence row are visible in some locations along this line, but no legal monuments were found. The tract boundary extends west at the section corner, which also serves as a state forest property corner. The tract boundary continues west to the drainage where it turns southeast to follow the drainage to the point of beginning.

Ecological Considerations

Wildlife use this tract heavily and many species were observed during the inventory. Those observed were eastern wild turkey, white-tailed deer, squirrels, chipmunks, various songbirds, hawks, turkey vultures, and rabbits. The rock bluffs and outcrops provide unique wildlife habitat and will be buffered to maintain current condition. There are numerous mast-producing trees on the tract, especially hard mast. Several den trees or potential den trees were seen during the inventory. There is a wildlife pond within this tract. This small man-made pond is approximately 20 feet in diameter and was holding water during the inventory field work. This wildlife pond will be maintained and perhaps enhanced with the prescribed management. Riparian area management will follow the guidance of the 2022 BMP Field Guide.

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 tract is slightly below compartment level numbers for some snag categories. It is important to note that these are compartment level guidelines and that even though the numbers may be low within the tract, it is likely that suitable levels are present in the surrounding landscape. The prescribed management will enhance the relative abundance of these features.

This tract is predominantly mesic oak-hickory community with some mixed hardwood areas in the lower portions by ephemeral drainages.

The mesic oak-hickory overstory is mostly white oak with a good representation of species from the red oak group (red, black, and scarlet) and some hickories (shagbark and pignut.) The midstory in this community has a mixture of white oak and pignut hickory with some black oak and shagbark hickory. Regeneration openings created in the 2002 timber harvest are dominated by yellow poplar and briers. Throughout the tract there are some oak saplings but mostly dominated by red and sugar maple, American beech, and white ash. There are some oak and hickory saplings present but far fewer and more scattered. The non-woody community of the stand is a mixture of species commonly associated with this forest type which includes but not limited to, green brier, viburnum, and blackberry.

The mixed hardwood community overstory is mostly yellow poplar with American beech, sugar and red maple, and some oak (white, black, and red) and pignut hickory mixed in. In the midstory it is mostly red and sugar maple, American beech, and blackgum with a few pignut hickory and white oak. For the understory it is almost exclusively sugar maple and American beech with some red maple, white ash, and blackgum. The non-woody community of the stand is a mixture of species commonly associated with this forest type which includes but not limited to, spicebush, viburnum, and various species of grasses.

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

The Tank Spring hiking trail runs through the western portion of the tract which is moderately well traveled. Other recreational activities within this tract include hunting. Evident by the presence of hunting stands observed during the inventory field work.

Cultural

This tract was reviewed for cultural sites during the forest resource inventory. 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

Forest Condition

A current forest resource inventory was completed on 7/7/2021 by forester Bailey McIntire. A summary of the estimate tract inventory results is in the tables below.

Mesic Oak-Hickory - 101 acres

Stand Summary Data (Trees > 11" DBH)

| Species | # Sawtimber Trees | Estimated Total Bd. Ft. |
|-------------------|-------------------|-------------------------|
| Black Oak | 578 | 290,710 |
| White Oak | 631 | 276,230 |
| Northern Red Oak | 271 | 110,460 |
| Yellow Poplar | 146 | 94,130 |
| Bitternut Hickory | 256 | 81,820 |
| Shagbark Hickory | 114 | 30,160 |
| Sugar Maple | 87 | 28,180 |
| American Beech | 81 | 22,970 |
| Pignut Hickory | 47 | 17,630 |
| Black Cherry | 19 | 10,670 |
| Sassafras | 43 | 7,620 |
| Chinkapin Oak | 9 | 3,670 |
| Total | 2,282 | 974,250 |

Inventory data for this cover type estimates a total volume of 974,250 board feet (BF) with a suggested removal of 220,887 - 281,487 BF through a timber harvest. The midstory is predominantly white oak, pignut hickory, and shagbark hickory with lesser amounts of black and red oak. Sugar maple and red maple are present in the midstory. The understory is dominated by red and sugar maple and American beech. There are some oak and hickory saplings but far fewer and more scattered. With the canopy now closed the midstory oak and hickory are starting to decline due to less crown space and restricted sunlight. This cover type would benefit from an improvement harvest that released midstory oak and hickory while capturing the declining larger black oaks. The harvest would focus on poor quality, damaged, low vigor, and poor health. Prior to or shortly after the harvest the area would benefit from a prescribed fire regime with the goal of improving ground conditions for seed germination and survival and reducing the amount of shade tolerant saplings. This would promote the establishment of less shade tolerant species such as oak, hickory, and black cherry to ensure they remain a component of this cover type long term.

Mixed Hardwood - 28 acres

Stand Summary Data (Trees > 11" DBH)

| Species | # Sawtimber Trees | Total Bd. Ft. |
|-------------------|--------------------------|----------------------|
| Yellow Poplar | 170 | 98,980 |
| Black Oak | 53 | 39,270 |
| Sugar Maple | 151 | 28,680 |
| White Oak | 20 | 15,750 |
| Pignut Hickory | 25 | 10,530 |
| Northern Red Oak | 14 | 9,710 |
| Bitternut Hickory | 8 | 7,170 |
| Black Walnut | 27 | 6,730 |
| American Beech | 5 | 3,590 |
| Total | 473 | 220,410 |

Inventory data for this cover type estimates a total volume of 220,410 BF with a suggested removal of 8,232 - 13,832 BF available for removal through a timber harvest. The midstory is predominantly yellow poplar, red and sugar maple, and American beech. The understory is almost exclusively red and sugar maple and American beech with some white ash. Although the harvest numbers are low most of this stand has low quality maple and beech and areas of low basal area (BA) that would be good locations for regeneration openings. The goal of any opening would be to promote species that are less shade tolerant or suitable for that site.

Some vines were observed in areas and in openings established during the previous harvest. Pre-Harvest TSI should be conducted in these areas to reduce the number of vines. The whole tract would benefit from some post-harvest TSI which would focus on releasing trees from competition and complete any openings that were put in during the harvest. The TSI would focus on removing poor form/vigor stems thus releasing better quality and healthier saplings in the midstory and understory. TSI would also increase snag numbers throughout the tract.

Summary Tract Silvicultural Prescription and Proposed Activities

The tract would benefit from an improvement harvest utilizing single tree, patch cuts or group selection, or an oak shelterwood to promote less shade tolerant species. The removal is estimated at 229,119 - 295,319 BF. Prior to the harvest, TSI should be completed to treat vines and openings established during the previous harvest. Within two years after the harvest, TSI should be conducted to complete openings and reduce the understory in any shelterwood areas to increase light penetration to the ground layer. Shortly after post-harvest TSI a prescribed fire regime should be started to reduce the understory and expose bare mineral soil to promote species which require more sunlight and bare mineral soil for seed germination. 3-5 years after the harvest a walkthrough of the tracts established regeneration openings and shelterwoods should be done to assess the need for any additional TSI or invasive work. Also, every year the fire lane should receive maintenance as labor staff permits to maintain accessibility. In 2042 this tract will need to be inventoried and a new management guide will need to be written for future management.

Soils/Hydrology: Management activities conducted on this tract will abide by State established BMP's to minimize the impacts of the management on soils and hydrology.

Wildlife: Activities prescribed for this tract will maintain habitat for wildlife and even enhance habitat for some species that require a range of forested habitat, for example closed canopy and early successional through management. Also, for bats the number of snags will increase through TSI and use of prescribed fire.

Recreation: Recreation within the tract will be suspended during management activities that pose a public safety concern.

Proposed Management Activity

Pre- Harvest TSI

Timber Harvest

Post-Harvest TSI Including Invasives

Prescribed Fire Regime

Regeneration opening monitoring

Inventory and Write new Guide

Proposed Date

Summer 2022-2023

2023-2026

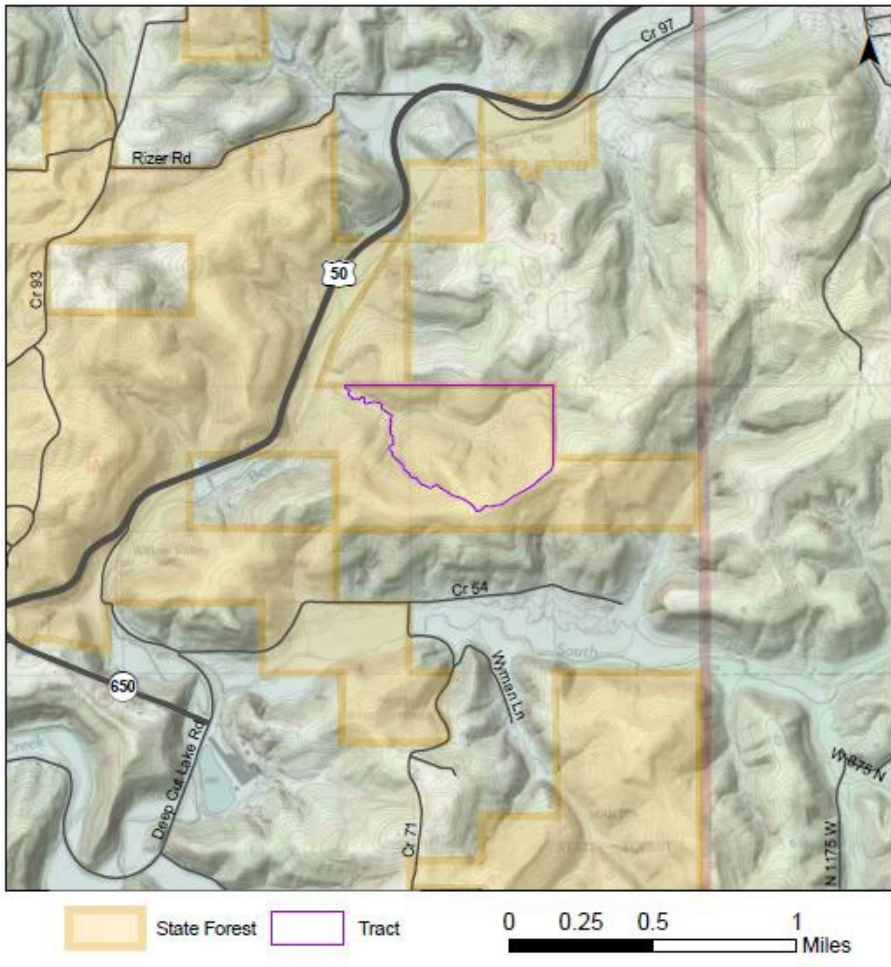
1-2 Years after Harvest

At least 1 Year after TSI

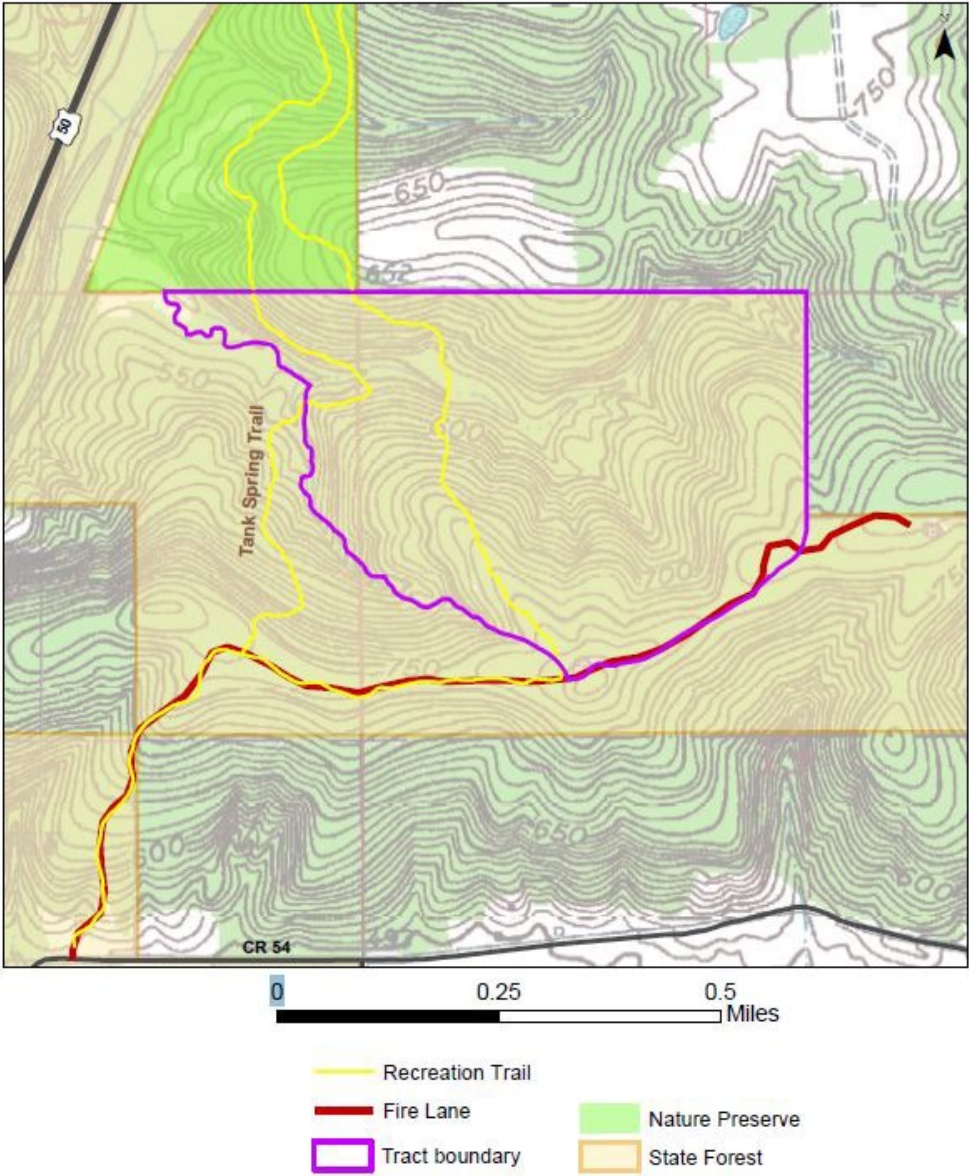
3 years post-harvest

2041-2043

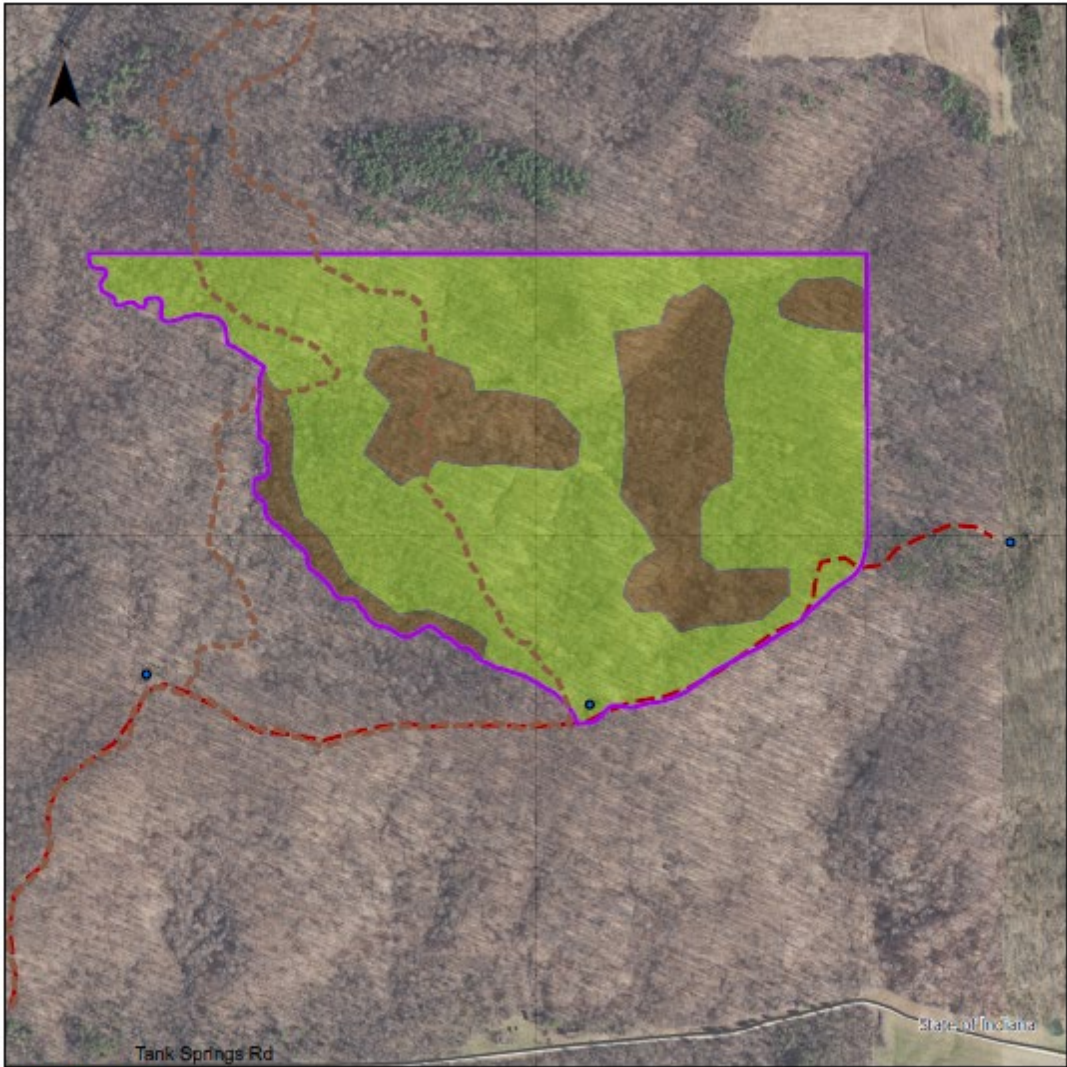
Location Map Compartment 6 Tract 5



Martin State Forest
Compartment 6 Tract 5
Tract Map



Martin State Forest Compartment 6 Tract 5 Cover Types Map



- Wildlife Ponds
- Mesic Oak-Hickory
- Mixed Hardwoods
- - - Fire Lanes
- Tract
- - - Recreational Trails

0 0.13 0.25
Miles

Martin State Forest
Alex Gust, Bailey McIntire
Management Cycle End Year 2041

Compartment 6
Date: 8/15/2021
Management Cycle Length 20 Years

Tract 6
101 Acres

Location

This tract, also known as 6360606, is in the NE 1/4 of Section 13, T-3N, R-3W, of Martin County, Indiana, in Martin State Forest. The nearest town is Shoals, Indiana, which is about 5 miles west-southwest.

General Description

Most of the tract is on a south and east facing aspect. The south-running side ridge however does provide a small area of west and southwest aspect. Slopes range from minimal on the ridge tops to approximately thirty percent in the very center of the tract, with fifteen to twenty-five percent being average. The very southeast corner of the tract, isolated from the remainder of the tract by a mapped intermittent stream, has slopes up to fifty percent. This area will be excluded from management activity due to access limitations and steepness.

History

- 1945 – State of Indiana land purchase (the 80-acre portion of it) from Anna Lou Cleveland on April 25, 1945 (Book 84, Page 281). She had purchased it from Charley Tolbert on March 27, 1937 (Book 78, page 268), who had purchased it from Versay Holsapple, et al on June 25, 1921 (Book 68, page 422).
- 1970's – Forest inventory completed indicating an estimated 137,800 BF, 2,650 BF/acre.
- 1975 – Wildlife Pond constructed by Indiana Department of Natural Resources Division of Fish & Wildlife
- 1986 – Forest inventory completed by Janet Eger indicating an estimated 256,922 BF, 3,778 BF/acre. The top three species by volume were white oak, red oak, and black oak.
- 1986 – Wildlife Pond rehab removing brush around pond
- 1996 – Vine control completed
- 1997 – Tract boundary modification completed which resulted in an additional 21 acres added to the tract
- 1999 – Forest inventory completed by Jim Lauck indicating an estimated 839,127 BF, 8,308 BF/acre. The top three species by volume were white oak, black oak, and yellow poplar.
- 2003 – Timber harvest removing 455 trees with an estimated 93,512 BF on 67 acres of the tract. 1,396 BF/acre for \$36,614.65. Following the timber harvest, timber stand improvement (TSI) was conducted.
- 2012 – Forest inventory completed by Abe Bear indicating an estimated 776,220 BF, 7,685 BF/acre. The top three species by volume were white oak, black oak, and yellow poplar.

Landscape Context

The primary land use in the area is timber production. This tract is part of a larger block of Martin State Forest. A large block of land to the north is privately owned by one individual. It is primarily used for timber production and managed as open grassland. There is a cattle farm south

of the tract with pastureland that shares a boundary with the eastern third of this tract. The only developed land in the area is the US Gypsum plant to the south and scattered residential areas.

Topography, Geology and Hydrology

There are three main drainages within this tract, one of which is a mapped intermittent stream, another the beginning of a mapped intermittent stream, and the last a large ephemeral. Two of these drainages merge shortly after leaving the state forest. These drainages flow across about a quarter mile of pasture on private land after exiting the state forest before entering the South Fork of Beaver Creek.

Soils

Wellston Silt Loam, 6 – 12% Slopes:

This soil is found on the upper ridge slopes and side slopes. This well-drained soil has a high available water capacity and permeability is moderate.

Wellston-Birks-Gilpin complex, 18 – 70% slopes:

This soil is typically deep, well drained, with moderate to moderately rapid permeability. Available water capacity is high in the Wellston, very low in the Berks and low in the Gilpin. These soils are moderately steep to very steep, and account for most of this tract. They are found from the drainages to near the ridgetops.

Zanesville Silt Loam, 2-6% slopes:

This is a deep, well-drained soil. It is found on the major ridgetop and one of the upper slopes. Available water capacity is moderate, and permeability is moderate above the fragipan and slow in the fragipan.

Access

A fire lane begins at Tank Springs Road and ends at the state forest boundary line on the north boundary of the tract. It follows the major east-west ridge that is common to tracts 6360604, 6360605 and 6360606.

Boundary

The north, east, and southern boundary are state forest boundaries. The west tract boundary is the fire lane. The north boundary has some fence evidence and runs east from a signed property corner with no existing stone or other monument to a corner stone in the northeast corner of the tract. Some fencing evidence was found running south to a stone at the southeast corner. Some fencing remains on the south boundary; however, it doesn't always run true.

Ecological Considerations

Wildlife use this tract heavily and many species were observed during the inventory. Those observed were eastern wild turkey, white-tailed deer, squirrels, chipmunks, various songbirds, hawks, vultures, and rabbits. The rock bluffs and outcrops provide unique wildlife habitat and will be buffered to maintain current condition. There are numerous mast-producing trees on the tract, especially hard mast. Several den trees or potential den trees were seen during the inventory. There is a wildlife pond within this tract. This small man-made pond is approximately 20 feet in diameter and was holding water during the inventory field work. This wildlife pond

will be maintained and perhaps enhanced with the prescribed management. Riparian area management will follow the guidance of the 2022 BMP Field Guide.

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 tract is slightly below compartment level numbers for some snag categories. It is important to note that these are compartment level guidelines and that even though the numbers may be low within the tract, it is likely that suitable levels are present in the surrounding landscape. The prescribed management will enhance the relative abundance of these features.

The oak-hickory community overstory is mostly black oak with a good representation of white oak and other species like red oak, scarlet oak, and some hickory (shagbark and pignut.) The midstory in this community has a good mix of white oak, red oak, and some hickory (pignut, shagbark, and bitternut). Regeneration openings created in the 2003 harvest are dominated by yellow poplar with briers in the understory. Throughout the tract there are some oak saplings, but it is mostly dominated by red maple, sugar maple, American beech, and white ash. The non-woody community of the stand is a mixture of species commonly associated with this forest type which includes but not limited to, green brier, viburnum, and blackberry.

The mixed hardwood community overstory is mostly yellow poplar with American beech, sugar maple, red maple, and some oak (white, black, and red) with pignut hickory mixed in. In the midstory it is mostly maple (red and sugar), American beech, and blackgum with a few pignut hickory and oaks. The understory it is almost exclusively sugar maple and American beech with some red maple, white ash, and blackgum. And there are a few areas with some oak and hickory. The non-woody community of the stand is a mixture of species commonly associated with this forest type which includes but not limited to, spicebush, viburnum, and various species of grasses.

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 recreation improvements present on the tract. Recreation use on this tract is mostly hunting deer, turkey, and squirrels. Other recreation is likely some hiking and foraging for mushrooms.

Cultural

This tract was reviewed for cultural sites during the forest resource inventory. 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

Forest Condition

A current forest resource inventory was completed on 8/15/2021 by forester Bailey McIntire. A summary of the estimate tract inventory results is in the tables below.

This tract can be split into two different cover types with most of the tract being classified as oak-hickory and some areas classified as mixed hardwood.

Mesic Oak-Hickory – 69.5 acres

Tract Summary Data (Trees > 11” DBH)

| Species | # Sawtimber Trees | Estimated Total Bd. Ft. |
|-------------------|--------------------------|--------------------------------|
| Black Oak | 554 | 275,090 |
| White Oak | 623 | 261,620 |
| Northern Red Oak | 182 | 80,610 |
| Bitternut Hickory | 173 | 49,950 |
| Yellow Poplar | 73 | 40,020 |
| Shagbark Hickory | 112 | 20,110 |
| Sugar Maple | 33 | 12,270 |
| Pignut Hickory | 24 | 8,560 |
| Black Cherry | 7 | 6,510 |
| Red Pine | 19 | 3,580 |
| American Beech | 12 | 2,860 |
| Total | 1,812 | 761,180 |

Inventory data for this cover type estimates a total volume of 761,180 board feet (BF) with a suggested removal of 132,912 - 175,512 BF through a timber harvest. The midstory contains some white oak and hickory (pignut and shagbark) with a few black and red oak mixed in. There is some sugar maple and red maple present in the midstory. The understory is dominated by red and sugar maple and American beech. There are some oak and hickory saplings present but far fewer and more scattered. The forest canopy has mostly closed since the last harvest restricting sunlight to the understory and midstory. There is some wind damage, blowdown red and black oak. This portion of the tract could use an improvement harvest to release midstory oak and hickory and capture mortality in the larger black oak, which show signs of decline. The harvest would focus on poor quality, damaged, low vigor, and poor health. Prior to or shortly after the harvest the area would benefit from a prescribed fire regime with the goal of improving ground conditions for seed germination and survival and reducing the amount of shade tolerant saplings. Areas of focus would be those with the greatest potential for oak and hickory regeneration. This would promote the establishment of less shade tolerant species such as oak, hickory, and black cherry to ensure they stay a strong part of the composition of species in the long term.

Mixed Hardwood-30 Acres

Tract Summary Data (Trees > 11" DBH)

| Species | # Sawtimber Trees | Total Bd. Ft. |
|-------------------|--------------------------|----------------------|
| Yellow Poplar | 172 | 55,540 |
| Sugar Maple | 106 | 24,220 |
| White Oak | 30 | 14,180 |
| Red Pine | 45 | 11,660 |
| American Beech | 13 | 9,960 |
| Black Oak | 14 | 9,340 |
| Northern Red Oak | 16 | 9,100 |
| Bitternut Hickory | 20 | 7,650 |
| American Sycamore | 27 | 6,130 |
| Total | 443 | 147,780 |

Inventory data for this cover type estimates a total volume of 147,780 BF with a suggested removal of 29,460 - 41,460 BF through a timber harvest. The midstory is predominantly red maple, sugar maple, American beech and blackgum with a few areas of oak and hickory present. The understory is almost exclusively red maple, sugar maple and American beech with some white ash. A few areas have some oak and hickory seedlings and should be considered for release from the more shade tolerant species. This stand has a few areas of low-quality trees and low basal area (BA) which would be good for regeneration openings. The goal in these openings would be to promote species that are less shade tolerant. These openings would be established when the improvement harvest is conducted. With these openings, some of the denser areas will also be marked for an improvement harvest focusing on poor quality, damaged, low vigor, and poor health trees to improve the health of the stand and to release the better-quality trees from competition.

The entire tract would benefit from post-harvest TSI which would focus on releasing trees from competition and complete openings that were established during the harvest. The TSI would focus on removing poor form/vigor stems thus releasing the better quality and healthier saplings in the midstory and understory. TSI would also increase the snag numbers throughout the tract.

Non-Forested - 1.5 acres

This area is an open area overrun by ailanthus within the oak-hickory cover type. The area should be treated immediately to eradicate the ailanthus. This will release the hardwoods and promote native vegetation. There are a few sugar maple and American beech present but they are of poor quality and suppressed by ailanthus. Once the ailanthus is removed the area should develop into a good mix of central hardwood species.

Summary Tract Silvicultural Prescription and Proposed Activities

This tract would benefit from an improvement harvest utilizing single tree, group, or patch cuts selection. An oak shelterwood could be utilized as well to promote less shade tolerant species. An estimated 162,372 - 216,972 BF would be removed through the timber harvest. Prior to the harvest, TSI would need to be completed to reduce vines and address openings established during the previous harvest. Tree of Heaven was observed during the inventory in the one

opening that must be treated and checked the following year. Within two years after the harvest, TSI should be conducted to complete openings established and reduce the understory in any shelterwood areas. This will increase sunlight penetration to the ground. Starting within two years after post-harvest TSI a prescribed fire regime should be started to create conditions more favorable for the germination, survival, and advancement of oak and hickory species. The fire lane should receive routine maintenance as labor staff permits to maintain accessibility. In 2042 this tract will need to be inventoried and a new management guide will need to be written for future management.

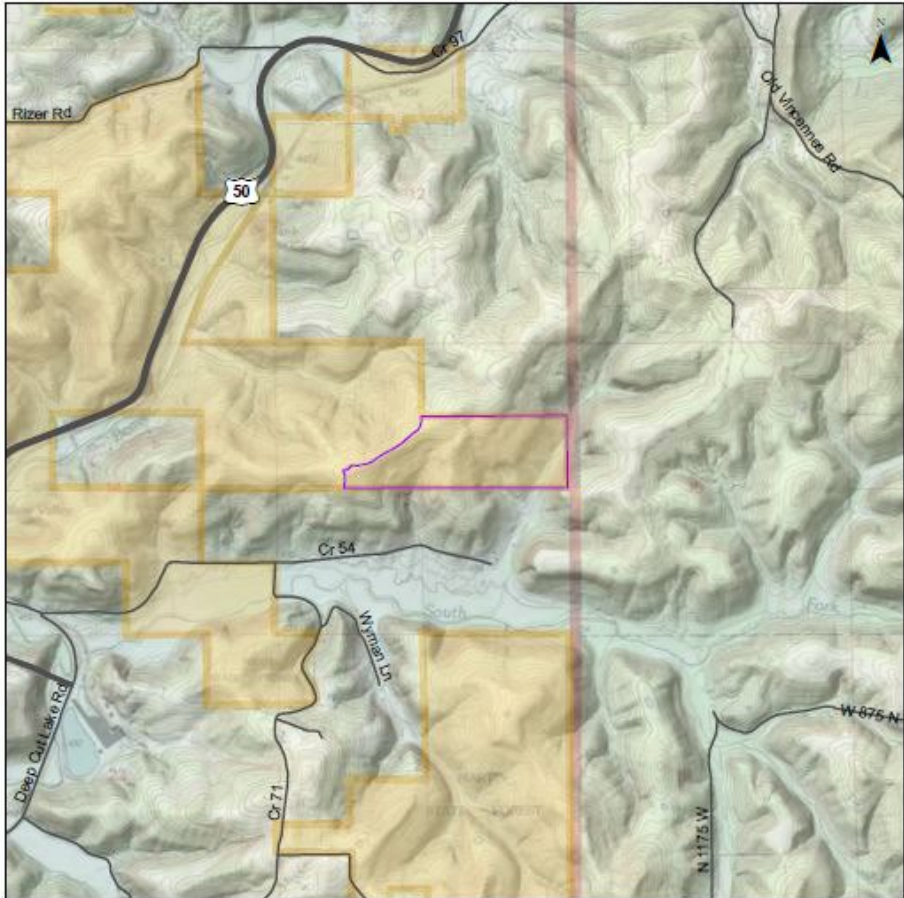
Soils/Hydrology: Management activities conducted on this tract will abide by State established BMP's to minimize the impacts of the management on soils and hydrology.

Wildlife: Activities prescribed for this tract will maintain habitat for wildlife and even enhance habitat for some species that require a range of forested habitat, for example closed canopy and early successional through management. Also, for bats the number of snags will increase through TSI and prescribed fire.

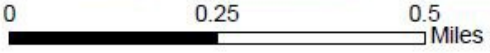
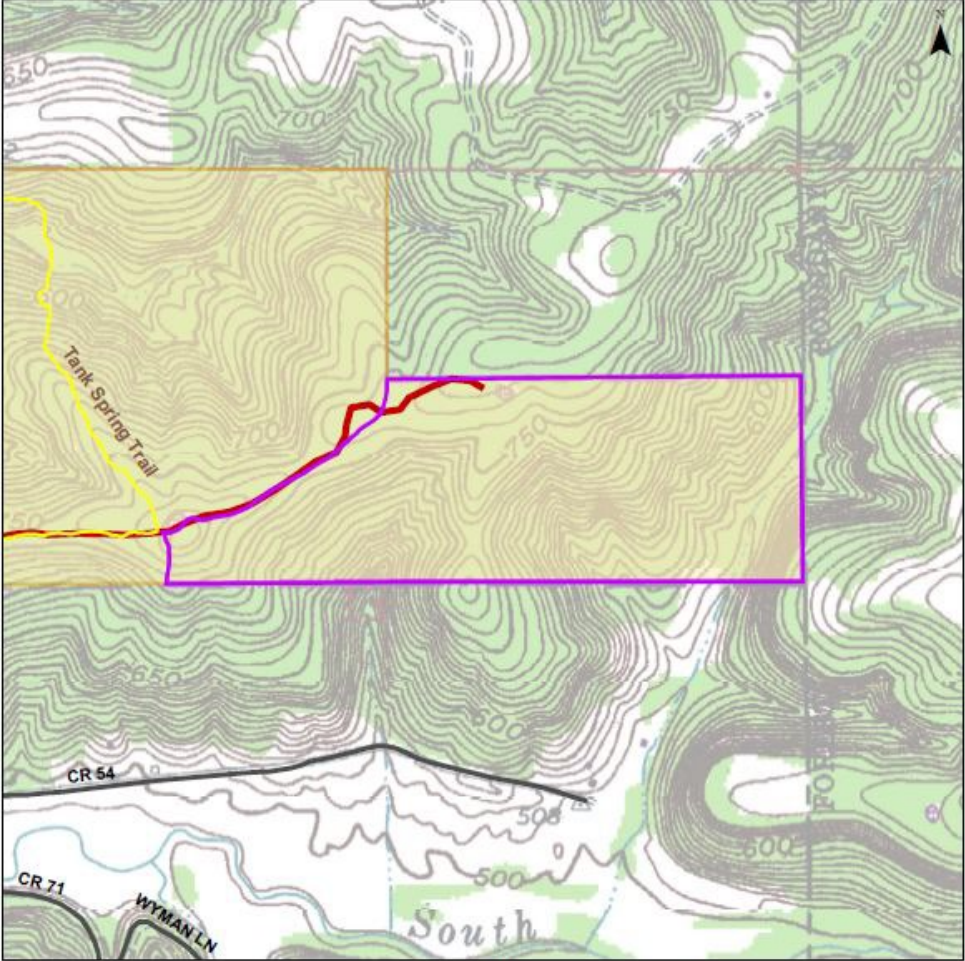
Recreation: Recreation within the tract will be suspended during activities that pose a public safety concern.

| <u>Proposed Management Activity</u> | <u>Proposed Date</u> |
|--------------------------------------|---------------------------|
| Treat Tree of Heaven | Summer 2022 |
| Pre- Harvest TSI | Summer 2023-2024 |
| Timber Harvest | 2023-2026 |
| Post-Harvest TSI Including Invasives | 1-2 Years after Harvest |
| Prescribed Fire Regime | At least 1 Year after TSI |
| Regeneration opening monitoring | 3 years post-harvest |
| Inventory and Write new Guide | 2040-2042 |

Location Map
Compartment 6 Tract 6

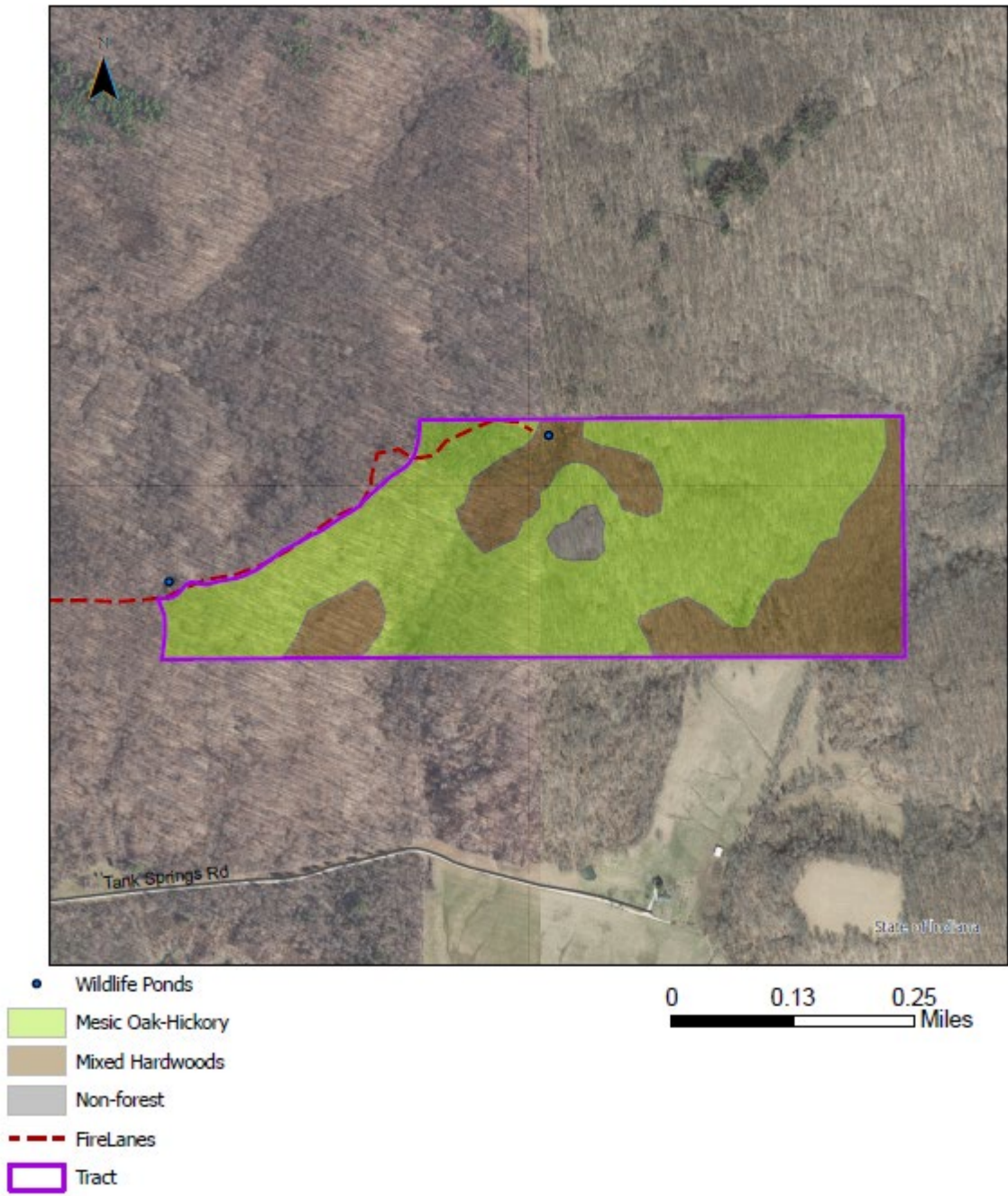


Martin State Forest
Compartment 6 Tract 6
Tract Map



-  Recreation Trail
-  Fire Lane
-  Tract boundary
-  State Forest

Martin State Forest Compartment 6 Tract 6 Cover Types Map



Martin State Forest
Forester: Alex Gust
Management Cycle End Year: 2042

Compartment 07 Tract 12
Date: 10/17/2022 Acres 124
Management Cycle Length: 20 Years

Location

Tract 12, also known as 6360712, is located on the north side of Mill Road in Martin County, Indiana, T3N R3W Section 26. The nearest town is Shoals, Indiana, about 4 miles west of this tract.

General Description

This tract consists primarily of a single ridge with a fair amount of gentle to moderately steep slopes. The entirety of this tract is forested. Within the tract the acreage is split between two cover types, mesic oak-hickory, and mixed hardwoods.

History

- 1948 – The state purchased the area for this tract in. It was part of a sale that included 160 acres. Walton Albright sold the land to the State of Indiana for \$1,040.00
- February 10, 1976 – a forest inventory was conducted by Ben Hubbard which reported an estimated volume of 210,952.5 board feet on 58 acres, 3,637.11 board feet/acre. The top three species by volume were white oak, sugar maple, and pignut hickory.
- April 30, 1984– a forest inventory was conducted by Janet Eger which reported an estimated volume of 395,527.1 board feet on 58 acres, 6,819.43 board feet/acre. The top three species by volume were sugar maple, pignut hickory, and white oak.
- February 06, 1990 – a timber harvest was conducted which contained 458 trees containing an estimated 108,852 board feet which was sold for \$27,413.00
- 2003 – Tract boundaries were adjusted within this compartment adding 56 acres to the west half of the tract bringing the tract acres to 124.
- July 10, 2007 – a forest inventory was conducted by Jim Lauck which reported an estimated volume of 770,090 board feet, 6,210.4 board feet/acre. Top three species by volume were white oak, yellow poplar, and sugar maple.

Landscape Context

All the land adjacent to this tract is forested. The areas to the east are other tracts managed by Martin State Forest. There is some Hoosier National Forest land in the vicinity. The areas beyond public land ownership are private property. Much of the private property nearby has been harvested within the last 15 years. There are some residential homes in the vicinity and some pastureland. The only change foreseeable is the possibility of a few more residences, but no major developments and no change to the land uses.

Topography, Geology and Hydrology

There is a mapped intermittent stream that runs northwest on the west side of the tract, where the west half of the tract drains into. The rest of the tract drains north and east into a mapped intermittent stream that also runs in a northwest direction. Two main ephemeral drains are located on the tract. One flows west and the other flows north. All the water from this tract eventually flows into Beaver Creek to the northwest.

Soils

Most of the tract has a soil type of WpfG. Next most abundant by area is WhfD2, and AgrC2. The least abundant soil in this tract is GacAW (see map on page 12.)

WpfG- Wellston-Tipsaw-Adyeville complex, 18 to 70 percent slopes

This moderately sloping to very steep, deep, well drained complex is found on side slopes in the uplands. It is well suited to trees. Equipment limitations and erosion hazards are management concerns that should be considered when planning sale layout and implementing Best Management Practices for Water Quality. Wellston has a site index of 81 for northern red oak and 90 for yellow poplar, Tipsaw has a site index of 70 for black and northern red oak, and Adyeville has a site index of 64 for white oak.

WhfD2- Wellston silt loam, 12 to 18 percent slopes, eroded

This strongly sloping, well-drained soil is on narrow ridgetops and on side slopes of the uplands. It is well suited to trees. This soil has a site index of 71 for northern red oak and 90 for yellow poplar.

AgrC2- Apalona-Zanesville silt loam, 6 to 12 percent slopes, eroded

This moderately sloping, deep, moderately well drained soil is found on sideslopes in the uplands. It is well suited to trees. A fragipan is present at 20 to 40 inches below soil surface that restricts drainage. Erosion hazards are main management concern that should be considered during implementation of Best Management Practices for Water Quality. This soil has a site index of 60 for white and black oak.

GacAW- Gatchel loam, 0 to 2 percent slopes, occasionally flooded, very brief duration

This nearly level, deep, somewhat excessively drained soil is found on flood plains and alluvial fans. It is well suited to trees and has not been evaluated for site index.

Access

This tract is accessible by fire lanes 7G and 7D, 7D runs east west along the northern tip of the tract and dead ends into private property in the west. 7G enters the tract from the southeast and is the best access to this tract for management purposes. Both fire lanes are maintained as access routes.

Boundary

Starting at county surveyor pin in the southwest corner of the tract, the property corner, and progressing clockwise the tract boundary heads north along private property to an old stone in the northwest corner. From there, the boundary turns east along another private property line to the top of the ridge to a property corner. Next, the boundary line turns north to where it intersects with a mapped intermittent stream, and heads southeast along the stream to where the stream forks. Then, it follows stream southwest to the property corner with surveyor pin. Lastly, the boundary heads west along private property back to the starting point.

Ecological Considerations

Wildlife use this tract heavily and many species were observed during the inventory. Those observed were White-tailed deer, fox and red squirrels, chipmunks, various songbird species, red-tailed hawks, turkey vultures, and box turtles. There are numerous

mast-producing trees on the tract, especially hard mast. Several den trees or potential den trees were seen during the inventory.

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.

The tract is nearly entirely forested. The dominant cover type is mesic oak-hickory which covers about 65 acres and is found on the ridgetop and most of the slopes. Mixed hardwood cover type is present on the remaining 59 acres.

The mesic oak-hickory community overstory is mostly white oak with representation from black and northern red oak and some hickories (e.g., shagbark, pignut, bitternut). Mid-story in this community is composed of various oak species (northern red, black, white) and pignut hickory with maple and beech also having a presence. Throughout the tract there are some oak saplings but mostly dominated by red and sugar maple, American beech, and some white ash. The non-woody community of the stand is a mixture of species commonly associated with this forest type which includes but not limited to, green brier, and viburnum.

For the mixed hardwood community, the overstory is mostly yellow poplar with sugar and red maple, American beech, and some oak (white, black, northern red), and pignut hickory. In the midstory it is mostly red and sugar maple, American beech, with a few pignut hickory and white oaks. For the understory it is almost exclusively sugar maple and American beech with some red maple, and white ash. The non-woody community of the stand is a mixture of species commonly associated with this forest type which includes but not limited to, spicebush, viburnum, and various species of grasses.

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

The most common form of recreation within this tract is hunting. Tree stands were observed at the time of inventory field work. There are no dedicated recreation trails in this tract. Fire lanes will be maintained to keep the tract accessible for management and recreational activities.

Cultural

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

Tract Subdivision Description and Silvicultural Prescription

This tract can be split into two different cover types with most of the tract being classified as mesic oak-hickory and the remaining area being classified as mixed hardwoods.

Mesic Oak-Hickory- 65 acres

A current forest resource inventory was completed on 10/17/2022 by resource specialist Alex Gust. A summary of the estimate tract inventory results is in the tables below.

Mesic Oak-Hickory Summary Data

(Trees > 11" DBH)

| Category | Estimate |
|-------------------------------|----------|
| Stand Acres (Forested) | 65 |
| Gingrich Stocking Percent (%) | 82 |
| Trees Per Acre | 82 |
| Basal Area Per Acre (SQFT) | 107.3 |
| Volume Per Acre (BDFT) | 12,281 |

Tract Summary Data (Trees > 11" DBH)

| Species | # Sawtimber Trees | Estimated Total Bd. Ft. |
|-------------------|-------------------|-------------------------|
| White Oak | 955 | 348,990 |
| Pignut Hickory | 427 | 70,880 |
| Northern Red Oak | 142 | 68,270 |
| Shagbark Hickory | 272 | 63,260 |
| Sugar Maple | 430 | 59,670 |
| Black Oak | 199 | 59,020 |
| Bitternut Hickory | 152 | 38,610 |
| American Beech | 173 | 28,030 |
| Chinkapin Oak | 45 | 20,510 |
| Yellow Poplar | 51 | 18,310 |
| Red Maple | 70 | 13,860 |
| American Sycamore | 14 | 4,470 |
| Blackgum | 10 | 4,400 |
| Total | 2,940 | 798,280 |

Inventory data for this cover type estimates a total volume of 798,280 BF with a suggested removal of 144,891 – 196,029 BF through a timber harvest. The midstory is predominantly white oak and hickory (pignut and shagbark) with a few black and red oak throughout. Some sugar and red maple are present in the midstory as well. The understory is dominated by red and sugar maple and American beech. There are some oak and hickory saplings present but far fewer and more scattered. With the canopy now closed the midstory oak and hickory are starting to decline due to the lack of sunlight and available space. This portion of the tract could use an improvement harvest to release midstory oak and hickory and to capture mortality in the larger

black oaks which show signs of decline. The harvest would primarily focus on poor quality, damaged, low vigor, and poor health trees. Prior to or shortly after the harvest the area would benefit from a prescribed fire regime with the goal of improving ground conditions for seed germination, survival, and advancement while reducing the amount of shade tolerant saplings. Areas of focus would be those with the greatest potential for oak and hickory regeneration. This would promote the establishment of less shade tolerant species such as oak and hickory to ensure they remain a strong component of the composition of species long term.

Mixed Hardwood- 59 acres

A current forest resource inventory was completed on 10/17/2022 by resource specialist Alex Gust. A summary of the estimate tract inventory results is in the tables below.

**Mesic Oak-Hickory Summary Data
(Trees > 11" DBH)**

| Category | Estimate |
|-------------------------------|----------|
| Stand Acres (Forested) | 59 |
| Gingrich Stocking Percent (%) | 74 |
| Trees Per Acre | 69 |
| Basal Area Per Acre (SQFT) | 100.5 |
| Volume Per Acre (BDFT) | 11,413 |

Tract Summary Data (Trees > 11" DBH)

| Species | # Sawtimber Trees | Estimated Total Bd. Ft. |
|-------------------|-------------------|-------------------------|
| Yellow Poplar | 378 | 212,820 |
| Sugar Maple | 549 | 120,680 |
| American Beech | 350 | 85,630 |
| White Oak | 127 | 49,100 |
| Black Oak | 98 | 42,810 |
| Blackgum | 193 | 31,530 |
| Shagbark Hickory | 130 | 21,690 |
| Pignut Hickory | 98 | 18,050 |
| American Sycamore | 40 | 17,590 |
| Northern Red Oak | 75 | 17,540 |
| Red Maple | 118 | 13,320 |
| Bitternut Hickory | 45 | 11,550 |
| Chinkapin Oak | 43 | 10,130 |
| Basswood | 32 | 6,750 |
| Black Cherry | 12 | 4,330 |
| Hackberry | 15 | 3,870 |
| American Elm | 14 | 3,040 |
| Persimmon | 21 | 2,960 |
| Total | 2,338 | 673,390 |

Inventory data for this stand estimates a total volume of 673,390 Board Feet (BF) with a suggested removal of 156,264 – 211,416 BF through a timber harvest. The midstory is

predominantly yellow poplar, red and sugar maple, and American beech. In the understory it is almost exclusively red and sugar maple and American beech with some white ash present. Most of this cover type is in the bottomland area near the ephemeral stream and transitioned to yellow poplar with some areas containing quality black walnut that could use release. The maple and beech present are of low quality and vigor and should be thinned. Some of the mixed hardwood areas are near old regeneration openings that could be extended while timber stand improvement (TSI) is performed in the old openings. The goal in these openings would be to promote some species that are less shade tolerant to establish within the openings. These openings would be extended when the improvement harvest is conducted in the oak-hickory cover type within the same tract. With these openings, some of the denser areas will also be marked for an improvement harvest focusing on poor quality, damaged, low vigor, and poor health trees to sustain and improve the health of the tract while reducing competition for available nutrients and sunlight.

Summary Tract Silvicultural Prescription and Proposed Activities

Both cover types will be managed under the same general prescription. An improvement harvest is recommended utilizing single tree selection, regeneration opening, group selection, or shelterwood cuts to promote less shade tolerant species in those areas removing an estimated 301,155-407,445 BF. Prior to the harvest TSI is recommended to reduce vines present in previous openings and the bottomland areas. There is some burning bush on the ridgetop that is just a small patch which should be treated with a goal of elimination prior to the timber harvest. Within two years after the harvest, TSI is recommended to complete any openings created and to reduce the understory in any shelterwoods to increase light penetration to the ground layer. Starting within two years after post-harvest TSI a prescribed fire regime should be started on suitable areas of the tract. This will reduce the understory competition and improve ground conditions for seed germination, survival, and advancement for less shade tolerant species. 3-5 years after the harvest a walkthrough of the areas that were established for regeneration openings or shelterwoods for any additional TSI needs and address invasive species accordingly. The evaluation should be done every 5-10 years after the initial evaluation. Additionally, every year the fire lanes should be routinely maintained to maintain accessibility. In 2042 this tract will need to be inventoried and a new resource management guide drafted.

Proposed Management Activity

Proposed Date

Pre- Harvest TSI/invasive work

Fall 2024

Timber Harvest

2025-2027

Post-Harvest TSI Including Invasives

1-2 Years after Harvest

Prescribed Fire Regime

At least 1 Year after TSI

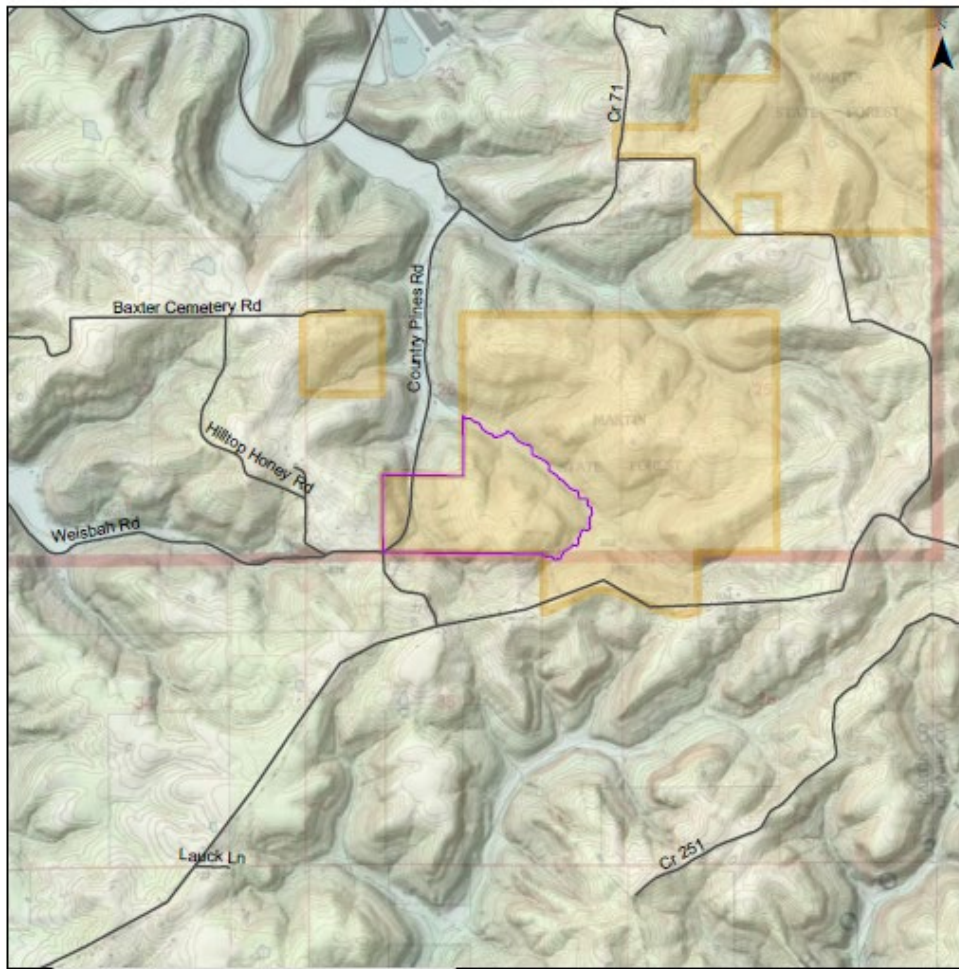
Regeneration opening monitoring

3 years post-harvest

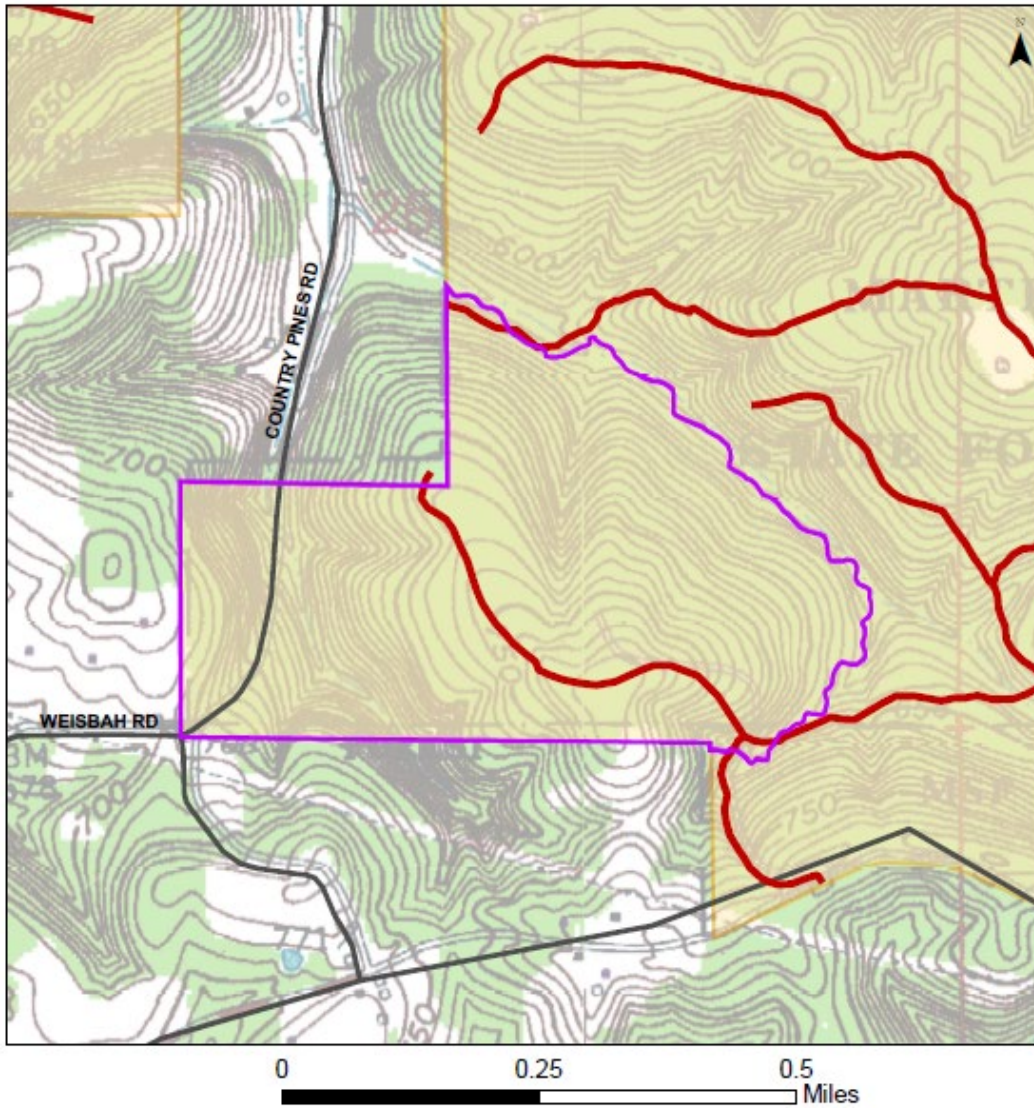
Inventory and Write new Guide

2041-2043

Martin State Forest
Location Map
Compartment 7 Tract 12

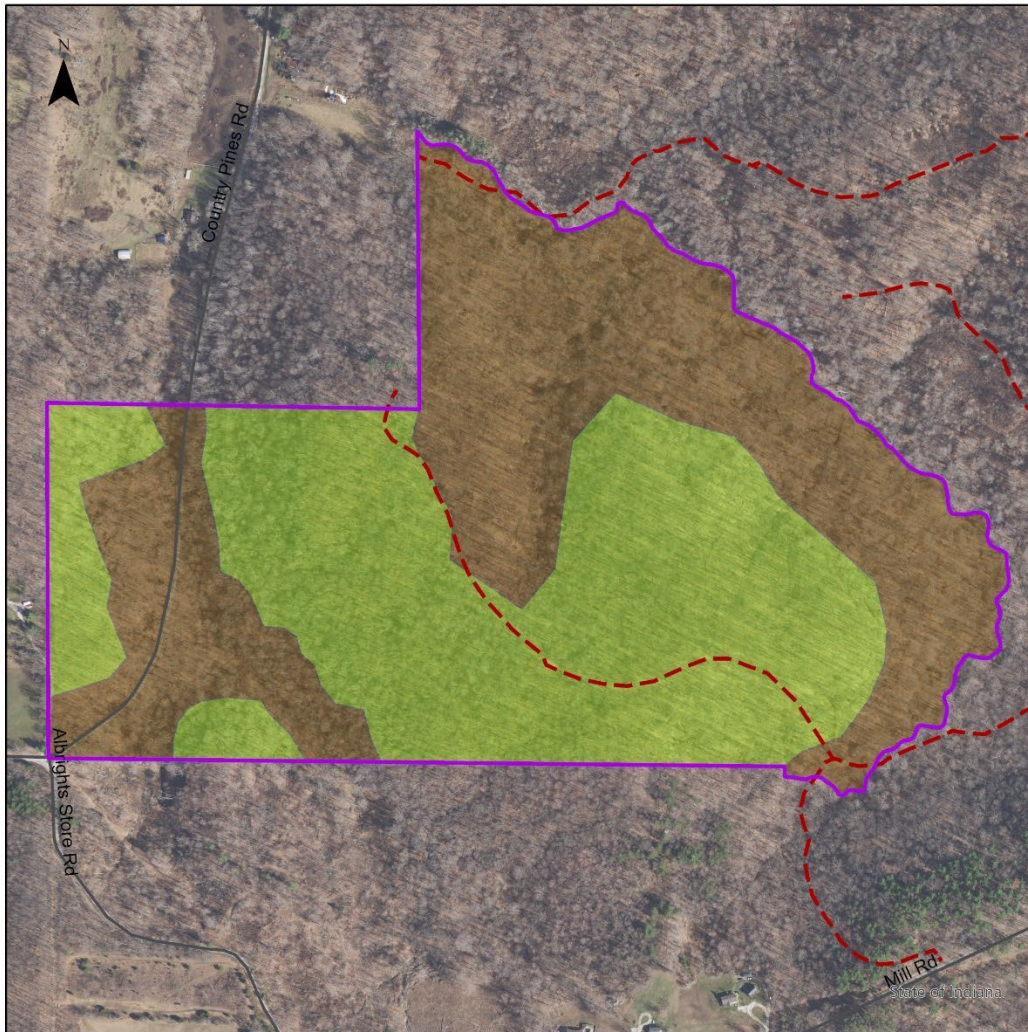


Martin State Forest Compartment 7 Tract 12 Tract Map



- Fire Lane
- Tract boundary
- State Forest

Martin State Forest Compartment 7 Tract 12 Cover Types Map



Mesic Oak-Hickory

Mixed Hardwoods

FireLanes

Tract

0 0.13 0.25 Miles