Indiana Department of Natural Resources
Division of Forestry

Indiana Department of Natural Resources

Resource Management Guides
Clark State Forest
30-day Public Comment Period (July 1, 2024 – July 30, 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 Clark State Forest.

Compartment 15 Tract 16
Compartment 16 Tract 7

To submit a comment on this document, go to:

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

You must indicate the State Forest Name, Compartment number and Tract number in the "subject or file reference" line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered and review posted at:

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

Note: Some graphics may distort due to compression.

Clark State Forest **Compartment:** 15 **Tract:** 16
Forester: Will Davis **Date:** July 2023 **Acres:** 237.58
Management Cycle End Year: 2043 **Management Cycle Length**: 20

Location

Compartment 15, Tract 16, also known as 6301516, is in Clark County, Indiana. Most of the tract is in Section 32 of T1N, R6E. Portions of the tract extend into Sections 31 and 33 of T1N, R6E, and Sections 4 and 5 of T1S, R6E. The tract is approximately 4 miles east of Borden, Indiana., and west of Deam Lake State Recreation Area.

General Description

This tract has five cover types, dry oak-hickory, mesic oak-hickory, mixed hardwoods, conifer, and non-forest. This tract is mostly dry oak-hickory. The dominant overstory tree in the tract is chestnut oak. Other overstory trees include white oak, Virginia pine, black oak, Northern red oak, scarlet oak, yellow poplar, American sycamore, and sugar maple. Most of this tract is fully stocked with large sawtimber size trees. The invasive species presence throughout the tract is moderate, with a greater presence closer to Deam Lake State Recreation Area. There is oak-hickory regeneration located throughout the entire tract accompanied by ample sugar maple, American beech, and white ash. Management of this tract will aim to lower the stocking through a timber harvest and timber stand improvement (TSI). The goal is to maintain the oak and hickory components within this tract.

History

- 1940 – Land acquired from Chester and Effie Guernsey
- 1940 – Land acquired from Hamilton and Jennie Jackson
- 1951 – Land acquired from Delrue and Clara Thomas
- 1964 – Land acquired from James and Bonnie Sneed
- 1964 – Land acquired from Addie May Sneed
- 1965 – Land acquired from Warren Gutermuth
- 1969 – Land acquired from the Clark County Board of Commissioners
- 1984 – Land acquired from Lee and Cathy Durning
- 1987 – Land acquired from Charles Heath
- 1987 – Inventory completed for State Forest Inventory Program
- 2023 – Forest inventory and management guide completed by Will Davis

Landscape Context

This tract is surrounded by other Clark State Forest tracts and a portion of Deam Lake State Recreation Area. The landscape is generally forested and used for forestry and recreational activities. There are some residential areas to the south of the tract.

Topography, Geology and Hydrology

6301516 consists of one large ridge with two main fingers that climb up to the northwestern portion of the tract and slope downward to the southeastern portion of the tract. The northern portion of tract could be defined as moderately sloped to steep and the southern portion generally flat or more level terrane.

6301516 is in the Mississippian Borden mapped bedrock formation. The formations constituting the Borden Group are the New Providence Shale, the Spickert Knob, and the Edwardsville. The Borden Group is composed dominantly of gray argillaceous siltstone and of shale. Fine-grained sandstone is common. Interbedded limestones form discontinuous lenses and facies that are minor except for the interval of the Floyds Knob Limestone Member at the base of the Edwardsville Formation.

6301516 is in the northeast portion of the Muddy Fork Watershed. There are two mapped intermittent streams located in the tract. There are no mapped perennial streams within the tract. On the eastern/northeastern border is Stone Branch and there is another intermittent stream on the western/southwest border. There are several smaller drainages within the tract which feed Stone Branch. Stone Branch flows southeast into Deam Lake. Big Run then flows south-southeast out of Deam Lake, eventually into Muddy Fork. The southeast portion of the tract is bordered by Deam Lake. General riparian management zone (RMZ) guidelines will be implemented in these areas in accordance with the 2022 Indiana Logging and Forestry Best Management Practices Field Guide.

Soils

BcrAW (28.6 Ac) - Beanblossom silt loam, 1 to 3 percent slopes, occasionally flooded, very brief duration

This nearly level, deep, well-drained soil is found along alluvial fans and flood plain. It is well suited to trees. Management planning should consider wet times of year. This soil has not been evaluated for site index.

ComC (17.6 Ac) - Coolville silt loam, 6 to 12 percent slopes

This moderately sloping, deep, moderately well-drained soil is on side slopes in the uplands. It is well suited to trees. Erosion hazards are concerns that should be considered during implementation of Best Management Practices for Water Quality. This soil has a site index of 66 for northern red oak.

ConD (35.6 Ac) - Coolville-Rarden complex, 12 to 18 percent slopes

These strongly sloping, deep, moderately well-drained soils are found on side slopes in the uplands. It is well suited to trees. Erosion hazards are concerns that should be considered during implementation of Best Management Practices for Water Quality. Coolville has a site index of 66 for northern red oak and Rarden has a site index of 71 for black oak.

GgbG (33.4 Ac) - Gilwood-Brownstown silt loams, 25 to 75 percent slopes

This moderately to very steep, moderately deep, well-drained complex is on side slopes in the knobs. It is suited to trees. The hazard of erosion is the main management concern that should be considered when implementing Best Management Practices for Water Quality. Brownstown has a site index of 50 for black oak and Gilwood has not been evaluated.

GgfD (1.4 Ac) - Gilwood-Wrays silt loams, 6 to 18 percent slopes

This gentle to moderately sloping, moderately deep, well-drained complex is found on side slopes of the uplands knobs. The hazard of erosion is the main management concern that should be

considered when implementing Best Management Practices for Water Quality. Wrays has a site index of 70 for white oak and 90 for yellow poplar and Gilwood has not been evaluated.

GmaG (55.9 Ac) - Gnawbone-Kurtz silt loams, 20 to 60 percent slopes
This moderately to very steep, moderately deep, well-drained complex is found on side. It is well suited to trees. The hazard of erosion and equipment limitations are main management concerns. These should be considered when planning management activities and implementing Best Management Practices for Water Quality. Kurtz has a site index of 60 for Northern red oak and Gnawbone has not been evaluated.

KxkC2 (8.0 Ac) - Knobcreek-Navilleton silt loams, 6 to 12 percent slopes, eroded
This moderately sloping, deep, well-drained complex is on side slopes in the uplands. It is well suited to trees. Erosion hazards are the main management concern that should be considered during implementation of Best Management Practices for Water Quality. Knobcreek has a site index of 76 for Northern red oak and 86 for yellow poplar and Navilleton has not been evaluated for site index.

Access

6301516 can be accessed by vehicle, horseback, bicycle, and foot. The south/southeastern portion of the tract can be accessed by vehicle or bicycle on Deam Lake Road and by bicycle, horse, or foot on Deam Lake Loop Horse/Bike Trail. The southeastern tip of the tract is accessible by foot traffic only on Hiking Trail 2. The middle of the tract leading to the northeast tip, can be accessed by horseback or foot by Tree Lane Loop Horse Trail. The northwestern boundary of the tract can be accessed by horseback or foot on the Top of the Rock Horse Trail.

Boundary

6301516 is surrounded by Clark State Forest. A portion of the tract in the southeast section is the Deam Lake State Recreation Area. The most southeast portion of the tract is Deam Lake. The state forest tracts that border 6301516 are as follows: 6301514 to the north, 6301512 to the northeast, 6301511 and 6301804 to the southeast, 6301802, 6301803 to the south, 6301801 to the southwest, and 6301608 to the west. Stone Branch Creek runs along the north/northeastern border and an unnamed intermittent stream runs along the south/southwestern border of the tract. The northwest portion is bordered by Top of the Rock Horse Trail.

Ecological Considerations

This tract contains diverse vegetation and wildlife resources conducive to providing habitat for a variety of wildlife species. Habitat types include dry oak-hickory, mesic oak-hickory, conifer, mixed hardwoods, and riparian areas. Evidence of several species of wildlife were noted at the time of inventory including the white-tailed deer, Eastern box turtle, black rat snake, Eastern racer, grey squirrel, crawfish, and a variety of woodpeckers and songbirds.
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 invasive species observed were: Japanese stilt grass, Japanese honeysuckle, bush honeysuckle, oriental bittersweet, multi-flora rose, winter creeper, tree-of-heaven, amur cork tree, and autumn olive. The most prevalent invasive species found was Japanese stilt grass. These invasive species are more prevalent near the streams, along the horse trail, and within Deam Lake State Recreation Area. Invasive species management should target problem areas.

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 main form of recreation in this tract is likely horse riding on one of the horse trails present in the tract. The most used horse trail would probably be the Deam Lake Loop due to the influx of horse riders that originate from Deam Lake State Recreation Area. Other activities may include biking, hiking, foraging, hunting, or fishing.

Cultural

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 activities.

Tract Subdivision Description and Silvicultural Prescription

The current forest resource inventory was completed in June of 2023 by Forester Will Davis. A summary of the estimated tract inventory results is located in the table below.

Tract Summary Data (trees >11"DBH):

Species	# Sawtimber Trees	Total Bd. Ft.
Chestnut Oak	4,357	558,510
White Oak	3,662	549,070
Virginia Pine	1,956	279,350
Black Oak	484	114,100
Northern Red Oak	426	77,440
Scarlet Oak	112	65,710
Yellow Poplar	105	53,610
American Sycamore	196	40,880
Sugar Maple	417	32,630
American Beech	319	25,630
Sweetgum	281	25,290
Blackgum	328	16,970

Red Maple	119	7,210
Shagbark Hickory	57	6,550
Bitternut Hickory	20	5,090
Pignut Hickory	48	4,530
Black Walnut	21	4,440
Black Cherry	71	4,040
Totals:	**12,887**	**1,871,050**

For the purposes of this resource management guide, this tract is being divided into five cover types based on forest composition: dry oak-hickory, mesic oak-hickory, mixed hardwoods, conifers, and non-forest.

Dry Oak-Hickory, 92.64 Acres

This cover type is the dominant portion of the tract at approximately 38.99% of the tract acreage. It is dominated by chestnut oak growing as well as the conditions allow. The percent stocking for this cover type is estimated at 96% classifying it as fully stocked. Chestnut oak makes up about 54.6% of the total volume for this cover type with white oak being the next closest at 19.7%. Overstory mortality is low, and the trees appear generally healthy. The dominant regeneration tended to be American beech, chestnut oak, white oak, black oak, sassafras, white ash, Virginia pine, sugar maple, and yellow poplar. There was oak regeneration present and with forest management, this cover type could continue to be prominently oak-hickory. The most prominent understory trees in these areas were chestnut oak, white oak, black oak, sugar maple, red maple, pawpaw, sassafras, and American beech. Overall, the herbaceous layer is generally sparse in this cover type, being more present on the lower slopes and less present on the upper slopes. Invasive species presence in these areas was overall moderate with the two most prevalent species being Japanese stilt grass and Japanese honeysuckle.

Dry Oak-Hickory Data (trees >11”DBH):

Species	**# Sawtimber Trees**	**Total Bd. Ft.**
Chestnut Oak	3,950	481,340
White Oak	993	173,720
Virginia Pine	531	76,880
Black Oak	297	55,080
Northern Red Oak	64	40,240
Scarlet Oak	82	31,890
Yellow Poplar	12	10,150
Pignut Hickory	48	4,530
Sugar Maple	48	4,040
Blackgum	37	3,170
Totals:	**6,062**	**881,040**

With the stocking higher in the fully stocked section, there are some trees that would benefit from being released. The understory is composed of more shade tolerant species that are creating competition for more desirable species. The goal is to retain this cover type for the foreseeable future. To do this, the oaks and hickories will need a competitive advantage by the removal of less desirable shade tolerant species. Mid-story removal is recommended due to most of the mid-story being undesirable and can be completed by chemical or mechanical methods, or with prescribed fire. If prescribed fire is used, it is recommended it be on 3–5-year intervals.

An improvement harvest is recommended for this cover type. The goal is to lower the basal area to 60-80. This could be accomplished with the use of an oak shelterwood, single tree selection harvest, regeneration openings or a combination. Invasive species control is recommended for the high presence areas and areas where the timber harvest or timber stand improvement (TSI) activities create large canopy gaps allowing increased light to reach the ground. It is estimated between 300,000 to 350,000 board feet would be removed from this cover type.

Mesic Oak-Hickory, 52.65 Acres

This cover type is the third largest cover type in the tract at approximately 22.16% of the tract acreage. White oak is the dominant species in this cover type growing as well as the conditions allow. Its stocking is estimated at 82% classifying it as fully stocked. White oak makes up about 69.1% of the total volume for this cover type with chestnut oak being the next closest at 8.8%. Overstory mortality is moderately high, but the live trees showed little signs of decline. The dominant regeneration tended to be American beech, sugar maple, white ash, white oak, chestnut oak, and pignut hickory. There is enough oak regeneration that, with forest management, the cover type could be retained. The most prominent understory trees in these areas were white oak, black oak, chestnut oak, American beech, sugar maple, and red maple. Overall, the herbaceous layer was sparse throughout but is more present in the lower slopes compared to the upper slopes. Invasive species presence in these areas mainly consisted of Japanese stilt grass. Overall, the invasive species presence was moderately high.

Mesic Oak-Hickory Data (trees >11”DBH):

Species	**# Sawtimber Trees**	**Total Bd. Ft.**
White Oak	2,439	320,820
Chestnut Oak	234	40,770
Virginia Pine	129	27,620
Black Oak	128	24,580
Scarlet Oak	68	21,790
Northern Red Oak	218	13,190
Sweetgum	38	6,070
Bitternut Hickory	20	5,090
Sugar Maple	49	2,810
American Beech	67	1,540
Totals:	**3,390**	**464,280**

This cover type is dominated by white oak. With the stocking classified as fully stocked, there are some trees that would benefit from being released from competition. The understory is composed of more shade tolerant species that are creating competition for more desirable species. The goal is to retain this cover type for the foreseeable future. To do this, the oaks and hickories will need a competitive advantage by the removal of less desirable shade tolerant species. Mid-story removal is recommended due to most of the mid-story being undesirable and can be completed by chemical or mechanical methods, or with prescribed fire. If prescribed fire is used, it is recommended it be on 3–5-year intervals.

An improvement harvest is recommended for this cover type. The goal is to reduce the basal area to 60-80. This could be accomplished with the use of an oak shelterwood, single tree selection harvest, regeneration openings, or combination. Invasive species control is recommended for the high presence areas and areas where the timber harvest or TSI activities create large canopy gaps allowing high quantities of light to reach the ground. It is estimated between 175,000 to 225,000 board feet would be removed from this cover type.

Mixed Hardwoods, 68.19 Acres

The mixed hardwoods cover type is the second largest portion of the tract, encompassing approximately 28.70% of the total tract acreage. The stocking for this cover type is estimated at 64% classifying it as fully stocked. The cover type is not dominated by a single species. The two most common species are blackgum and sweetgum. The higher volume trees tended to be yellow poplar and American sycamore both totaling at about 24% of the total volume for this cover type. The regeneration in these areas were American beech, yellow poplar, blackgum, sweetgum, pawpaw, white oak, chestnut oak, American sycamore, sugar maple, and red maple. The understory of this cover type was generally composed of yellow poplar, pawpaw, spicebush, American beech, sugar maple, red maple, blackgum, and sweetgum. The herbaceous layer in this cover type was overall sparse but is more present in the lower slopes compared to the upper slopes. The overstory mortality was overall moderate but the live trees showed little signs of decline. Invasive species presence in these areas was high. Japanese stilt grass, Japanese honeysuckle, and oriental bittersweet were more prevalent than other invasive species in these areas.

Mixed Hardwoods Data (trees >11”DBH):

Species	**# Sawtimber Trees**	**Total Bd. Ft.**
Yellow Poplar	93	43,460
American Sycamore	196	40,880
Chestnut Oak	173	36,400
White Oak	166	35,800
Virginia Pine	173	34,830
Black Oak	59	34,440
Northern Red Oak	144	24,010
American Beech	81	20,150
Sweetgum	243	19,220
Sugar Maple	194	16,900
Blackgum	291	13,800

Scarlet Oak	30	12,030
Red Maple	119	7,210
Shagbark Hickory	57	6,550
Black Walnut	21	4,440
Black Cherry	71	4,040
Totals:	**2,111**	**354,160**

Stocking is towards the lower end of the fully stocked section of the stocking chart. The overstory is truly mixed with blackgum being the most prominent tree species in most areas. A light improvement harvest is recommended. The goal is to bring down the basal area to 60-80 and promote a diverse, healthy cover type. A harvest is estimated to remove between 40,000 – 60,000 board feet from this cover type.

A selective harvest utilizing single tree and patch cuts is recommended to release vigorous healthy trees and maintain a diverse cover type. Mid-story removal can be completed by chemical or mechanical methods, or with prescribed fire. An oak shelterwood harvest could be used in areas, if applicable to promote oak-hickory growth but should include the use of prescribed fire. Invasive species control is recommended for the high presence areas and is recommended in areas where harvest or TSI creates a regeneration opening allowing high quantities of light to reach the ground.

Conifer, 20.20 Acres

This cover type is the next-to-smallest at approximately 8.50% of the tract acreage. Its stocking is estimated at 115% which is well overstocked. The dominant species in this cover type is Virginia pine which makes up about 81.6% of the total volume for this cover type. White oak is the next largest species group in this tract at only 10.9% of the total volume. The herbaceous layer in this cover type is overall moderate being more present in the lower slopes and less present on the upper slopes. Overstory mortality of this cover type was moderate, but the live trees showed little signs of decline. The regeneration in these areas include Virginia pine, white oak, chestnut oak, Eastern redcedar, American beech, white ash, red maple, and sugar maple. The most prominent understory trees in this cover type were Virginia pine, white oak, white ash, American beech, and Eastern redcedar. Overall, the herbaceous layer was moderate and is more present in the lower slopes compared to the upper slopes. Invasive species presence in these areas were high with Japanese honeysuckle, Japanese stilt grass, autumn olive, winter creeper, and multi-flora rose all having a noticeable presence in this cover type.

Conifer Data (trees >11”DBH):

Species	# Sawtimber Trees	Total Bd. Ft.
Virginia Pine	1,123	140,020
White Oak	64	18,730
Sugar Maple	126	8,880
American Beech	171	3,940
Totals:	**1,484**	**171,570**

Stocking is severely overstocked which promotes competition at an unhealthy level.

This cover type is dominated by Virginia pine with a few overstory white oaks. The Virginia pine is mainly un-even aged and with little management. An improvement harvest is a possibility to manage the site and bring the basal area down to 60-80. A harvest is estimated to remove between 40,000 – 60,000 board feet from this cover type.

Due to overstocking and age of the Virginia pine, some area could be harvested and followed by a hardwood tree planting.

In areas where it is possible to simply transition to an oak-hickory or mixed hardwoods cover type or to promote other desirable species, a selective harvest utilizing patch cuts may be used. Mid-story removal can be completed by chemical or mechanical methods, or with prescribed fire. If prescribed fire is used, the area could be repetitively burned on a 3–5-year interval to ensure the mid-story is properly controlled. Invasive species control is advised for the high presence areas and is recommended in areas where harvest or TSI creates a regeneration opening allowing high quantities of light to reach the ground.

Non-forest, 3.9 Acres
The non-forest cover type is the smallest cover type representing 1.64% of the total tract acreage. It is in the southeastern portion of the tract. These areas are open developed areas of Deam Lake State Recreation Area consisting of mowed areas, a shelter, trailhead, and parking areas.

Summary Tract Silvicultural Prescription and Proposed Activities
Management recommendations in this tract should begin with pre-harvest invasive species work to limit seed producing populations and reduce their presence. Pre-harvest TSI could be utilized to promote oak regeneration in areas where an oak shelterwood may be utilized. A timber harvest is recommended to lower the basal area, improve regeneration conditions, or to transition an area of the tract from one cover type to another. This could be done by using a combination of single tree selections, oak shelterwood, or group selection or patch cut openings. An opening followed by a hardwood tree planting is possible in areas dominated by Virginia pine. It is estimated a total of 555,000 – 695,000 board feet would be removed from this tract.

Other considerations
Regeneration evaluation – Three to five years after the completion of the timber harvest, a regeneration inspection will be performed to ensure that desired regeneration is occurring within the harvest area. If deemed unsatisfactory, mitigations will be made.

Timber stand improvement (TSI) – TSI could be performed post-harvest. TSI is prescribed to complete regeneration openings, remove species inhibiting desirable regeneration, and address problem occurrences of invasive species.

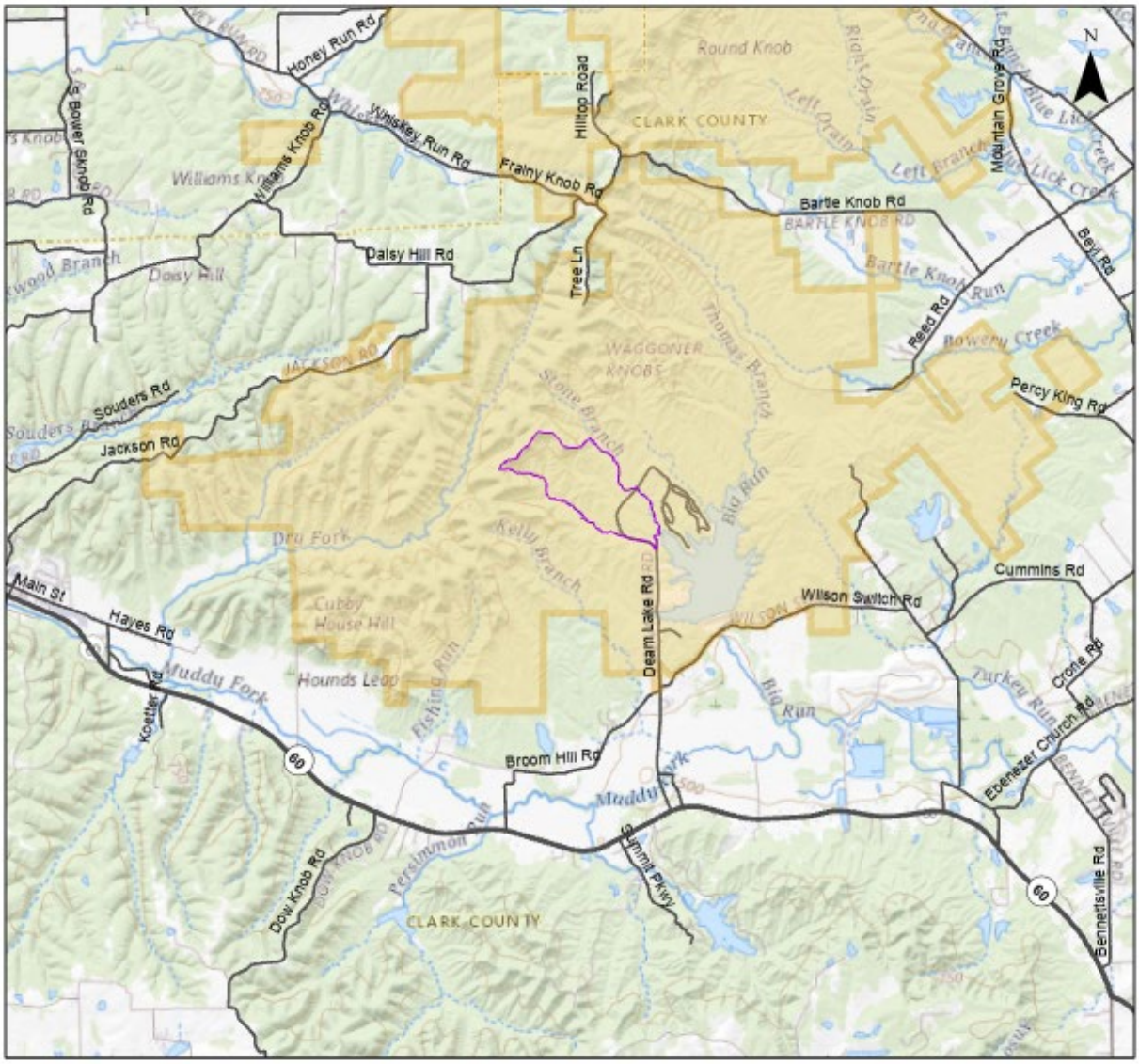
Best management practices (BMP) – During and after completion of the proposed management activity, BMPs will be implemented and monitored in order to minimize soil erosion.

Guide revision – This tract should receive another inventory and management guide approximately 20 years following the completion of this inventory.

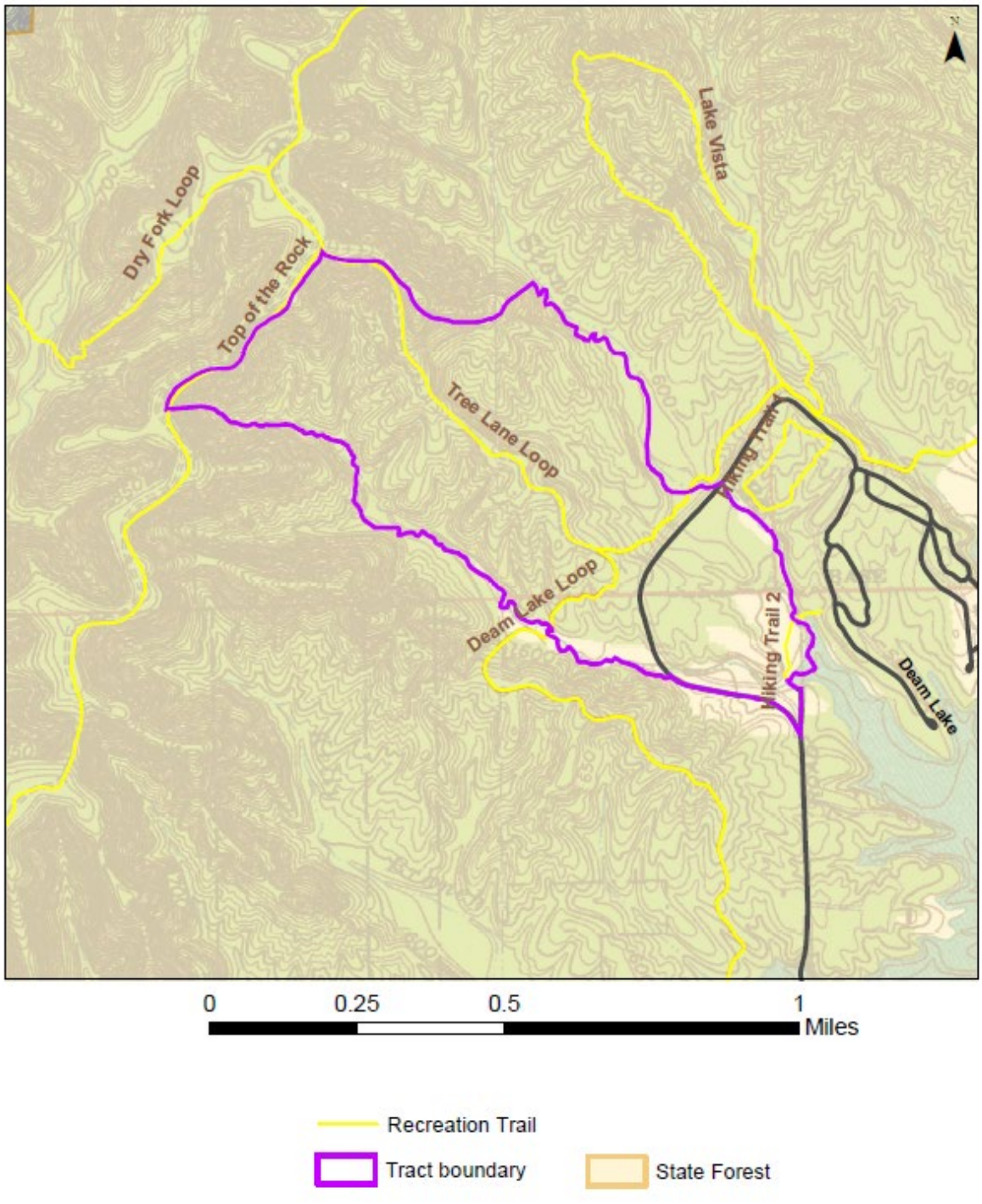
Prescribed fire – A regime of prescribed fire may be started within this tract to reduce the abundance of shade tolerant species in the midstory and to help control invasive species as well as to promote a more open forest structure.

Proposed Management Activity	**Proposed Date**
Pre-harvest invasive species work	2024-2025
Pre-harvest timber stand improvement	2024-2025
Timber Harvest	2025-2026
Post-harvest timber stand improvement	Within 2 years of harvest
3-year regeneration opening review	3 following harvest
Prescribed fire	2025+
Next forest inventory	2044

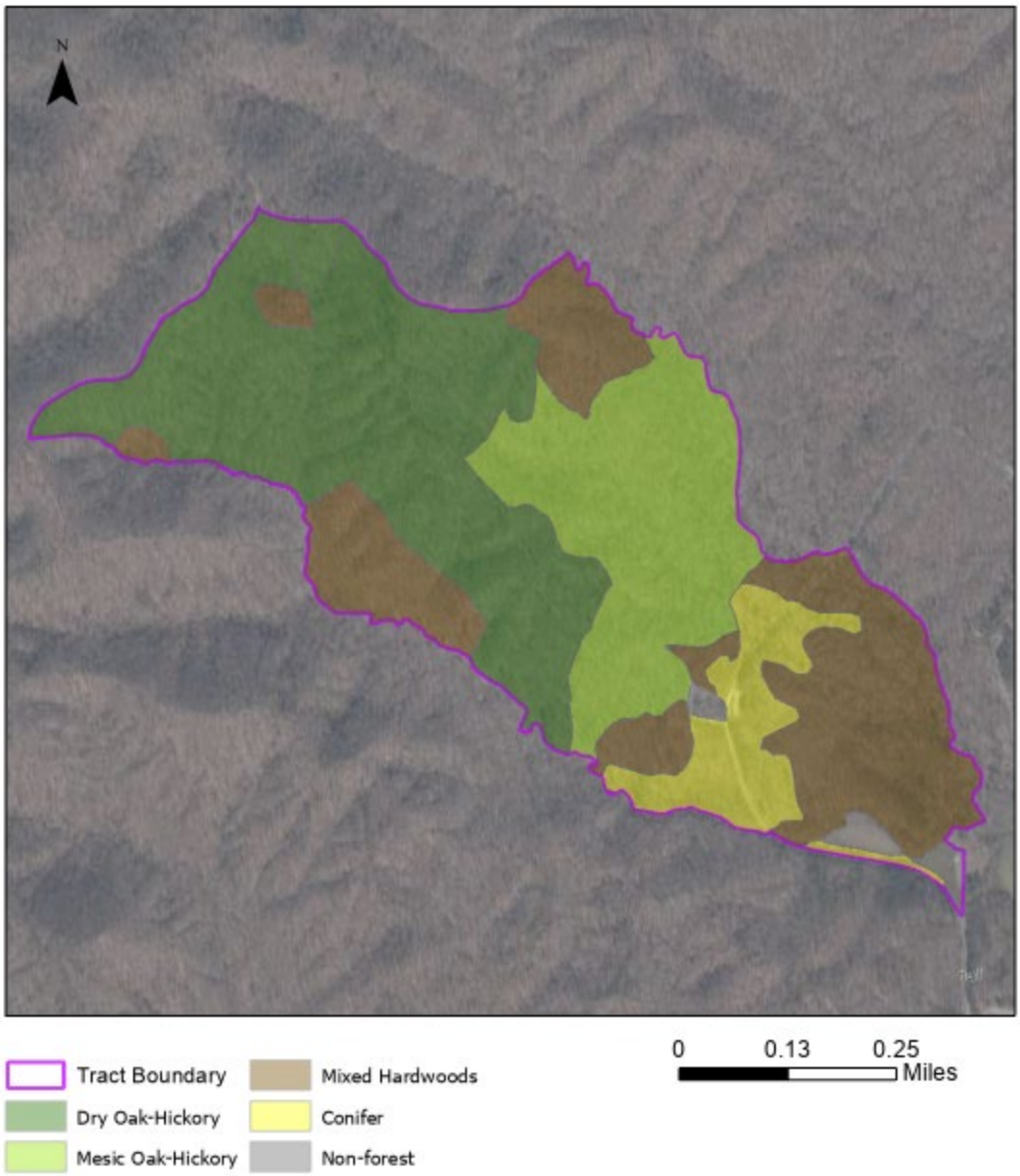
Clark State Forest
Location Map
Compartment 15 Tract 16



Clark State Forest
Compartment 15 Tract 16
Tract Map



Clark State Forest
Compartment 15 Tract 16
Cover Types Map



Clark State Forest **Compartment:**16 **Tract:** 07
Forester: Will Davis **Date:** June 2023 **Acres:** 112
Management Cycle End Year: 2043 **Management Cycle Length**: 20

Location

Compartment 16, Tract 7, also known as 6301607, is in Clark County, Indiana. This tract is in Section 31, Section 32, and briefly in Section 29 of T1N R6E. This tract is approximately 4 miles east from Borden, Indiana, and approximately 1 mile northwest of the Deam Lake State Recreation Area.

General Description

This tract has four different cover types: dry oak-hickory, mesic oak-hickory, mixed hardwoods, and beech maple. The dominant overstory species in the tract is chestnut oak with other notable overstory species being yellow poplar, white oak, sugar maple, and Virginia pine. Most of this tract has high stocking of sawtimber size trees. The invasive species presence throughout the tract overall is low, with only a few high-density areas. The regeneration is truly mixed in this tract with the four most prevalent species being: chestnut oak, American beech, yellow poplar, and sugar maple. Management of this tract will aim to lower the stocking through a timber harvest and timber stand improvement (TSI) in locations throughout to improve conditions for growth and advancement of oak and hickory.

History

- 1939 – Land acquired from Roerk
- 1940 – Land acquired from Jackson
- 1941 – Land acquired from McClellan
- 1951 – Land acquired from Thomas
- 1955 – Aerial photograph was taken showing the tract entirely forested
- 1960 – Aerial photograph was taken showing the tract entirely forested
- 1969 – Land acquired from the Clark County Board of Commissioners
- 1987 – Land acquired from Heath
- 1987 – Forest inventory completed for the State Forest Inventory Program
- 2023 – Forest inventory and resource management guide completed by Will Davis

Landscape Context

This tract is surrounded by Clark State Forest. The landscape is generally all forested and used for forestry activities. About 1 mile to the southeast is Deam Lake State Recreation Area. Approximately 0.5-1 mile to the northwest, there are residential homes, agricultural fields, and some private forest land.

Topography, Geology and Hydrology

6301607 consists of a large ridge that is at its highest point along the eastern portion of the tract. To the west, the terrain is more gradual than compared to the east. The tract is in the Muddy Fork watershed. There are several drainages within the tract which terminate in Dry Fork, a mapped intermittent stream. The entire tract could be defined as moderate to steep with most of the tract being western facing slopes.

6301607 is in the Mississippian Borden mapped bedrock formation. The formations constituting the Borden Group are the New Providence Shale, the Spickert Knob, and the Edwardsville. The Borden Group is composed dominantly of gray argillaceous siltstone and of shale. Fine-grained sandstone is common. Interbedded limestones form discontinuous lenses and facies that are minor except for the interval of the Floyds Knob Limestone Member at the base of the Edwardsville Formation.

General riparian management zone (RMZ) guidelines will be implemented in these areas in accordance with the 2022 Indiana Logging and Forestry Best Management Practices Field Guide.

Soils

BcrAW (8.3 Ac) – Beanblossom silt loam, 1 to 3 percent slopes, occasionally flooded, very brief duration

This nearly level, deep, well-drained soil is found along alluvial fans and flood plain. It is well suited to trees. Management planning should consider wet times of year. This soil has not been evaluated for site index.

CtwB (5 Ac) – Crider-Bedford-Navilleton silt loams, 2 to 6 percent slopes

This gently sloping, deep, well-drained soil is on ridgetops in the uplands. It is well suited to trees. Crider has a site index of 90 for white oak and 98 for yellow poplar. Bedford has a site index of 70 for white oak and 90 for yellow poplar. Navilleton has not been evaluated for site index.

GgbG (36Ac) – Gilwood-Brownstown silt loams, 25 to 75 percent slopes

This moderately to very steep, moderately deep, well-drained complex is on side slopes in the knobs. It is suited to trees. The hazard of erosion is the main management concern that should be considered when implementing Best Management Practices for Water Quality. Brownstown has a site index of 50 for black oak and Gilwood has not been evaluated.

GmaG (46.4 Ac) – Gnawbone-Kurtz silt loams, 20 to 60 percent slopes

This moderately to very steep, moderately deep, well-drained complex is found on side. It is well suited to trees. The hazard of erosion and equipment limitations are main management concerns. These should be considered when planning management activities and implementing Best Management Practices for Water Quality. Kurtz has a site index of 60 for Northern red oak and Gnawbone has not been evaluated.

KxkC2 (16.8 Ac) – Knobcreek-Navilleton silt loams, 6 to 12 percent slopes, eroded

This moderately sloping, deep, well-drained complex is on side slopes in the uplands. It is well suited to trees. Erosion hazards are the main management concern that should be considered during implementation of Best Management Practices for Water Quality. Knobcreek has a site index of 76 for Northern red oak and 86 for yellow poplar and Navilleton has not been evaluated for site index

Access

The access to 6301607 is by fire lane, which also serves as portions of the Tree Lane Loop Horse Trail and Dry Fork Loop Horse Trail. The fire lane runs along the northeastern boundary of the

tract and is accessible by vehicle from Tree Lane, a dead-end road off Bartle Knob Road. Dry Fork Loop Horse Trail runs through the interior of the tract and exits the tract at the southwestern tip.

Boundary

6301607 is surrounded by Clark State Forest. The tracts that border it are as follows: 6301606 to the north, 6301514 to the east, 6301608 to the south, 6301609 to the southwest, and 6301605 to the northwest. The western portion of the tract is bordered by Dry Fork and the southeast portion is bordered by an ephemeral stream. The following are the boundary features for each cardinal direction of the tract: the northern border consists of a drainage between two ridges, the eastern border is the Tree Lane Loop Horse trail, the southern border is a drainage between two ridges, and the western border is Dry Fork.

Ecological Considerations

This tract contains diverse vegetation and wildlife resources conducive to providing habitat for a variety of wildlife species. Habitat types include oak-hickory, mixed hardwoods, some conifers scattered throughout, and riparian areas. Evidence of several species of wildlife were noted at the time of inventory including white-tailed deer, eastern box turtles, multiple types of lizards, black rat snakes, garter snakes, and a variety of woodpeckers and songbirds.

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 invasive species observed within the tract were: Japanese stilt grass, Japanese honeysuckle, bush honeysuckle, oriental bittersweet, and multi-flora rose. The most prevalent invasive species found was Japanese stilt grass. These invasive species are more prevalent near the streams and along the horse trails. Invasive species management could target these areas or a particular species, such as 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

The main recreational use in this tract is likely horse riding on Tree Lane Loop Horse Trail and Dry Fork Loop Horse Trail. These are horse trails that are commonly used by horse riders due to their proximity to Deam Lake State Recreation Area. Other likely uses of the tract include hiking, hunting, and foraging.

Cultural

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 activities.

Tract Subdivision Description and Silvicultural Prescription

The current forest resource inventory was completed in June of 2023 by Forester Will Davis. A summary of the estimated tract inventory results is located in the table below.

Tract Summary Data (trees >11"DBH):

Species	# Sawtimber Trees	Total Bd. Ft.
Chestnut Oak	1,830	203,560
Yellow Poplar	605	194,950
White Oak	847	169,050
Northern Red Oak	223	51,940
Scarlet Oak	182	44,480
Sugar Maple	614	41,160
Pignut Hickory	415	30,470
Virginia Pine	320	28,580
American Beech	285	25,350
Black Oak	78	23,130
American Sycamore	19	12,780
Blackgum	78	9,290
Shagbark Hickory	63	12,040
Black Cherry	26	7,490
Bitternut Hickory	55	5,380
Red Maple	32	3,170
Black Walnut	27	2,300
White Ash	9	2,180
Sassafras	37	860
Totals:	**5,745**	**868,160**

For the purposes of this resource management guide, this tract was divided into four cover types based on forest composition: dry oak-hickory, mesic oak-hickory, mixed hardwoods, and beech-maple.

Dry Oak-Hickory, 34 Acres

This cover type is the second largest portion of the tract at approximately 30% of the tract acreage. It is dominated by chestnut oak growing as well as the conditions allow. The percent stocking is estimated at 92% classifying it as fully stocked. Chestnut oak makes up 65% of the total volume for this cover type with Virginia pine next at 7%. Overstory mortality is low, and the trees are

generally healthy. The dominant regeneration in this cover type tends to be American beech, sugar maple, red maple, pignut hickory, chestnut oak, Northern red oak, and black oak. There is oak regeneration, and with forest management could continue to be prominently an oak-hickory cover type. The most prominent understory trees in these areas are chestnut oak, black oak, Northern red oak, yellow poplar, pawpaw, spice bush, American beech, sugar maple, and red maple. Overall, the herbaceous layer is moderate, being more present on the lower slopes and less on the upper slopes. Invasive species in this cover type is moderately low with Japanese stilt grass being the species most observed (mostly in the lower areas along drainage ditches or streams).

The goal is to retain this as an oak-hickory cover type. To do this, the oak and hickory will need a competitive advantage by the removal of less desirable shade tolerant species. A mid-story removal is recommended due to most of the mid-story being undesirable. This could be completed by chemical methods, mechanical methods, or through prescribed fire. Fire intervals of 2 – 5 years could assist with reducing shade tolerant species and benefit a wide variety of wildlife species while providing diverse structure.

An improvement harvest is recommended for this cover type. The goal is to lower the basal area to 60-80. The timber harvest would remove between 100,000 - 150,000 board feet using silviculture systems such as oak shelterwood, single tree selection, or patch cuts.

Invasive species control is recommended to minimize spread.

Dry Oak-Hickory Data (trees >11"DBH):

Species	**# Sawtimber Trees**	**Total Bd. Ft.**
Chestnut Oak	1,713	177,940
Virginia Pine	215	20,230
White Oak	85	17,130
Black Oak	65	15,110
Pignut Hickory	57	11,200
Yellow Poplar	16	9,330
Scarlet Oak	28	9,170
Northern Red Oak	36	6,520
Sugar Maple	109	4,170
Shagbark Hickory	9	1,650
Totals:	**2,333**	**272,450**

Mesic Oak-Hickory, 24 Acres

This cover type is the third largest portion of the tract at approximately 21% of the tract acreage. White oak is prevalent in this cover type growing as well as the conditions allow. The stocking is estimated at 112% classifying it as overstocked. White oak makes up 53% of the total volume for this cover type with northern red oak next at 15%. Overstory mortality is low, and the trees appear generally healthy. The dominant regeneration in this cover type tends to be American beech, sugar maple, sassafras, pignut hickory, white oak, Northern red oak, and scarlet oak. There is oak regeneration, and with forest management the cover type could continue to be prominently an oak-

hickory cover type. The most prominent understory trees are white oak, Northern red oak, scarlet oak, yellow poplar, American beech, sugar maple, pawpaw, spice bush, and sassafras. Overall, the herbaceous layer is moderate, being more present on the lower slopes and less on the upper slopes. Invasive species are moderately low with Japanese honeysuckle being the species most observed.

Mesic Oak-Hickory Data (trees >11"DBH):

Species	# Sawtimber Trees	Total Bd. Ft.
White Oak	681	124,220
Northern Red Oak	160	34,230
Scarlet Oak	127	22,050
Pignut Hickory	279	10,970
Yellow Poplar	25	9,830
Chestnut Oak	37	8,730
Black Oak	13	8,020
Shagbark Hickory	45	6,790
Black Cherry	22	5,120
Virginia Pine	57	3,500
American Beech	102	2,340
Totals:	**1,548**	**235,800**

White oaks of decent quality are prevalent in this cover type. With the percent stocking being overstocked, there are some nice trees. The understory is composed of more shade tolerant species that are creating competition for more desirable species. The goal is to retain this oak-hickory cover type for the foreseeable future. To do this, the oaks and hickories will need a competitive advantage by the removal of less desirable shade tolerant species. A mid-story removal is recommended due to most of the mid-story being undesirable and can be completed by chemical methods, mechanical methods, or through prescribed fire.

An improvement harvest is also recommended for this cover type. The goal is to lower the basal area to 60-80. The timber harvest would remove an estimated 100,000 - 125,000 board feet. Silvicultural methods used could be oak shelterwood, single tree selection, or patch cuts.

Invasive species control is recommended to minimize spread.

Mixed Hardwoods, 44 Acres

This cover type is the largest portion of the tract, encompassing approximately 40% of the tract acreage. The stocking for this cover type is estimated at 74% classifying it as fully stocked. The cover type is dominated by decent quality yellow poplar with white oak and sugar maple respectively being the next closest species. Yellow poplar makes up 55% of the total volume for this cover type. White oak makes up 9%, and sugar maple 8% of the total volume. The dominant regeneration is American beech, yellow poplar, sugar maple, and red maple. The prominent understory trees are yellow poplar, pawpaw, spicebush, American beech, sugar maple, and red maple. The mortality in this cover type was overall moderately high. The mortality observed consisted of downed logs and snags (mainly white ash). The white ash mortality is damage caused

from the emerald ash borer. The invasive species presence was also overall moderately high. The most prominent invasive species to note in these areas was Japanese stilt grass.

Mixed Hardwoods Data (trees >11"DBH):

Species	# Sawtimber Trees	Total Bd. Ft.
Yellow Poplar	549	171,890
White Oak	81	27,700
Sugar Maple	388	25,230
American Beech	148	17,200
Chestnut Oak	54	13,620
Scarlet Oak	22	9,450
American Sycamore	15	8,330
Blackgum	72	7,650
Northern Red Oak	22	7,380
Bitternut Hickory	55	5,380
Pignut Hickory	71	5,080
Virginia Pine	48	4,850
Shagbark Hickory	9	3,600
Black Cherry	4	2,370
Black Walnut	27	2,300
Red Maple	13	2,100
Sassafras	37	860
Totals:	**1,615**	**314,990**

An improvement harvest is recommended for this cover type. The goal is to lower the basal area to 60-80 and promote a diverse, healthy cover type. An improvement harvest could remove an estimated 100,000 - 150,000 board feet from this cover type.

A selective harvest with some mid-story removal is recommended throughout to increase the presence of oak and hickory. Patch cuts could be used to promote young forest habitat and promote less shade tolerant species. An oak shelterwood harvest could be used in areas where sufficient oak and hickory are present.

Invasive species treatments are recommended for areas of high presence and where timber harvest or TSI increase light reaching the ground.

Beech-Maple, 10 Acres

This cover type is the smallest portion of the tract at approximately 9% of the tract acreage. The percent stocking is 59% barely classifying it as fully stocked. Sugar maple is prevalent in this cover type growing as well as the conditions allow. Sugar maple makes up 26% of the total volume for this cover type with American beech next at 13%. Overstory mortality is low, and the trees are generally healthy. The dominant species are sugar maple, American beech, American sycamore, and yellow poplar. The most prominent understory trees are American beech, sugar maple, and

red maple. Overall, the herbaceous layer is at a moderate level, being more present on the lower slopes and less on the upper slopes.

Invasive species presence in these areas is moderate with Japanese honeysuckle being the species most observed.

Beech-Maple Data (trees >11"DBH):

Species	# Sawtimber Trees	Total Bd. Ft.
Sugar Maple	117	11,760
American Beech	35	5,810
American Sycamore	4	4,450
Yellow Poplar	31	3,900
Northern Red Oak	5	3,810
Scarlet Oak	5	3,810
Chestnut Oak	26	3,270
Pignut Hickory	8	3,220
White Ash	9	2,180
Blackgum	6	1,640
Red Maple	19	1,070
Totals:	**265**	**44,920**

A light improvement timber harvest could be conducted throughout this cover type. The timber harvest could remove an estimated 15,000 - 20,000 board feet from this cover type. The goal is to maintain a diverse, healthy cover type, and improve the presence of oak and hickory, where possible.

An improvement timber harvest using single tree selective and patch cuts is recommended for this cover type. An oak shelterwood harvest may be possible in certain locations to promote oak and hickory species.

Invasive species control is recommended for high presence areas and areas where the timber harvest or TSI increase the amount of light reaching the ground.

Summary Tract Silvicultural Prescription and Proposed Activities

Management recommendations are to begin with preharvest invasive species control to reduce seed producing populations and less pervasive invasive species. Preharvest TSI could be utilized to reduce midstory shade tolerant species and improve conditions for oak regeneration. This could be accomplished mechanically or chemically. A timber harvest is recommended to lower the basal area, improve conditions for regeneration, and possibly expand current oak-hickory cover types, where applicable. The timber harvest would remove an estimated 315,000 and 445,000 board feet. Silvicultural systems that could be utilized include single tree selection, group selection/canopy gaps, patch cuts, and oak shelterwood. Postharvest TSI and follow up invasive species control is

recommended to complete any openings; release trees not released through the harvest and address any invasive species needed.

Other considerations

Regeneration evaluation – Three to five years after the completion of the timber harvest, a regeneration inspection will be performed to ensure that desired regeneration is occurring within the harvest area. If deemed unsatisfactory, mitigations will be made.

Timber stand improvement (TSI) – TSI could be performed post-harvest. TSI is prescribed to complete regeneration openings, remove species inhibiting desirable regeneration, and address problem occurrences of invasive species.

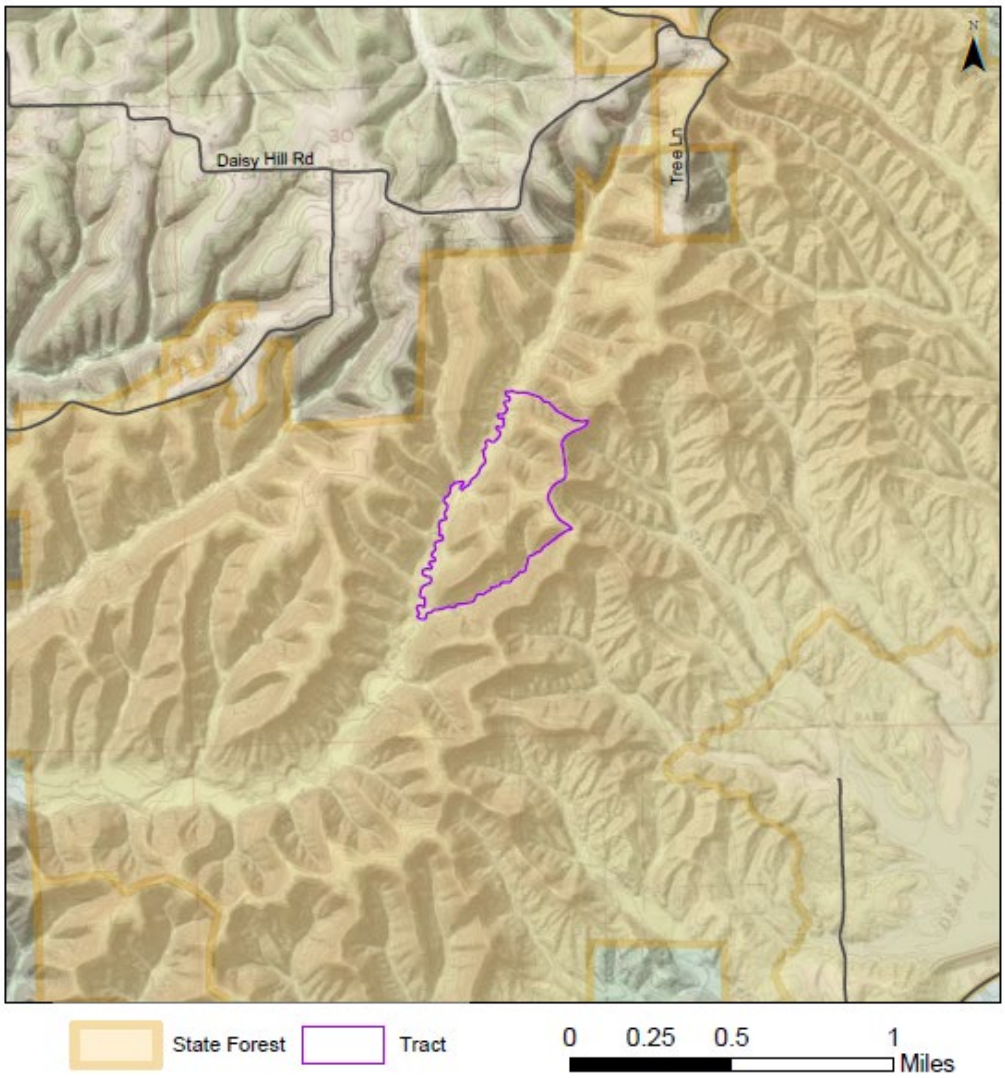
Best management practices (BMP) – During and after completion of the proposed management activity, BMPs will be implemented and monitored to minimize soil erosion.

Guide revision – This tract should receive another inventory and management guide approximately 20 years following the completion of this inventory.

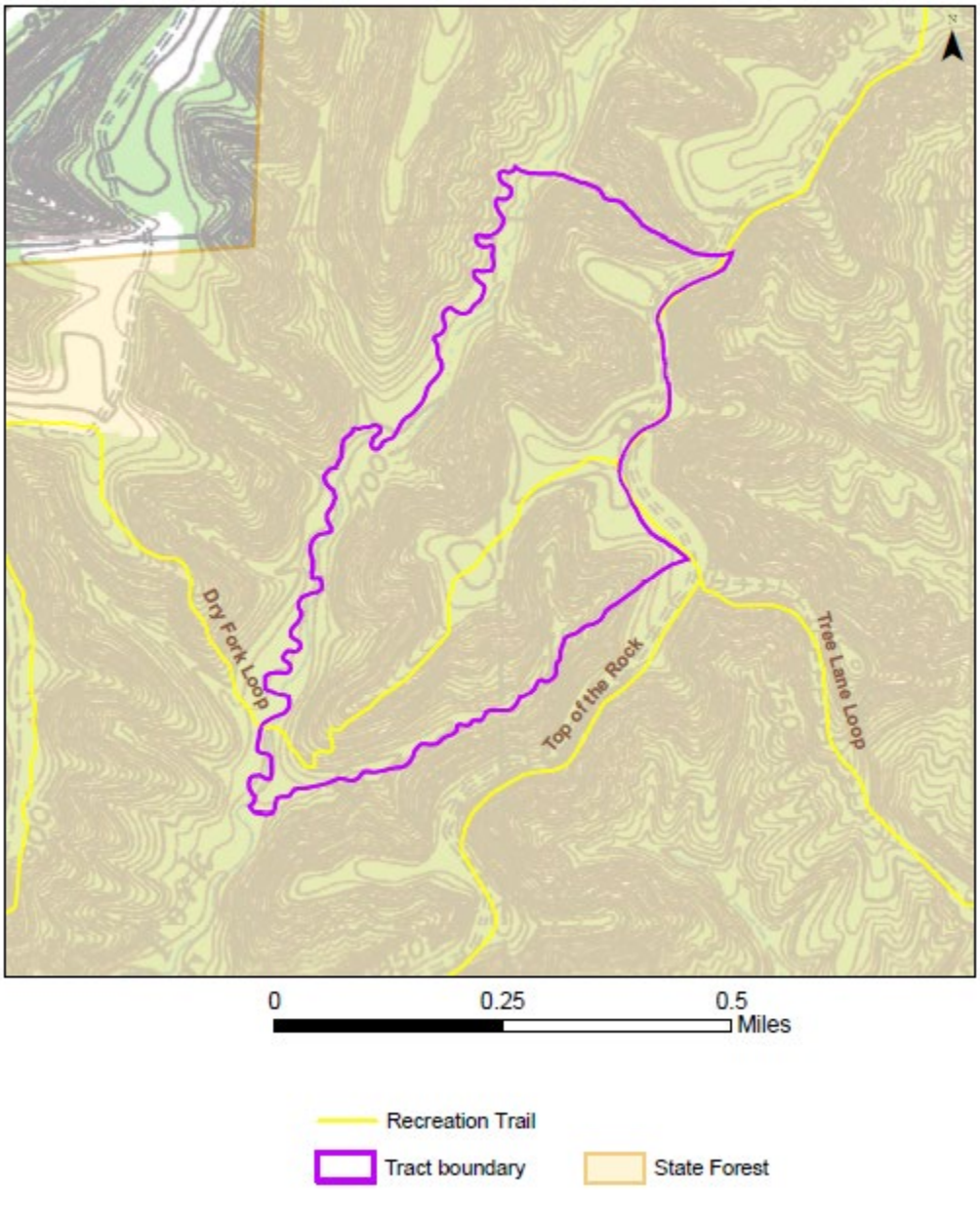
Prescribed fire – A prescribed fire regime may be started within this tract to reduce the abundance of shade tolerant species in the midstory and assist with the control of invasive species.

Proposed Management Activity	Proposed Date
Pre-harvest invasive species work	2024-2025
Pre-harvest timber stand improvement	2024-2025
Timber Harvest	2025-2026
Post-harvest timber stand improvement	Within 2 years of harvest
Post-harvest invasive species work	Within 2 years of harvest
3-year regeneration opening review	Within 3 years of harvest
Prescribed fire	2025+
Next forest inventory	2044

Clark State Forest
Location Map
Compartment 16 Tract 7



Clark State Forest
Compartment 16 Tract 7
Tract Map



Clark State Forest
Compartment 16 Tract 07
Cover Types Map