RESOURCE MANAGEMENT GUIDE

DRAFT

State Forest: Morgan-Monroe **Compartment** 17 **Tract** 27
Forester: Amy Zillmer **Date:** June 24, 2010
Management Cycle End Year: 2020 **Management Cycle Length:** 20 years

Location

This tract is located in parts of Sections 34 & 35, T9N, T1E, Monroe County, Indiana. It is located in a block of state forest between Brummett's Creek and Sewell Road. It is approximately 7 miles east of Bloomington.

General Description

This tract is 71 acres of which the majority is an oak-hickory cover type of which all are commercial. Mixed hardwoods were also prevalent along the tract's coves and northerly facing slopes and bottomlands.

Table 1. Species list by relative abundance from May 2010 inventory on 6371727

Regeneration	Understory	Overstory
American Beech	Sugar Maple	Chestnut Oak
Sugar Maple	Red Maple	White Oak
Ironwood	American Beech	Black Oak
Red Maple	White Oak	Sugar Maple
Blackgum	Chestnut Oak	Northern Red Oak
Pignut Hickory	Basswood	Scarlet Oak
Sassafras	Blackgum	Basswood
Basswood	Yellow Poplar	Yellow Poplar
Bitternut hickory	Sassafras	White Ash
Blue Beech	Red Elm	Pignut Hickory
Dogwood	Shagbark Hickory	Bitternut hickory
Ohio Buckeye	Pignut Hickory	Shagbark Hickory
	White Ash	American Beech
		Chinkapin Oak
		Black Cherry

History

Much of this area was granted to the Division of Forestry in 1950's and 60's by the federal government. A second purchase in 1997 provided the final 39 acres to the tract .

Although no management has occurred on tract under state ownership on ground evidence supports that a timber harvest occurred shortly before 1997 acquisition.

Historical aerial photography suggests that the ridges were most likely farmed and the side slopes were grazed.

An inventory was conducted during May 2010 by Amy Zillmer. The findings of that inventory are highlighted in the report below.

Landscape Context
The tract is nestled in to the west side of large block of rugged upland forest of which much is publically owned. The Mt. Carmel Fault line is just west running along the Brummett's Creek River Valley. This low-lying, nutrient rich alluvium is used heavily for agriculture. Some of the area serves as flood plain for the Monroe Reservoir. There has been a modest increase in residential development along some of the privately owned ridges.

Topography, Geology and Hydrology
Tract 27 is comprised of a one main finger ridge and several secondary ridges that slopes down toward the northwest. Ephemeral and unmapped intermittent drainages move water west into Brummett's Creek. The underlying geology of this tract is most likely a combination of sandstone, shale, and siltstone. Limestone outcrops were noted at soil surface during inventory.

Soils
BkF-Berks-Weikert complex
This is the main soil found on tract. It forms from sandstone bedrock about 38" under the surface. Slopes range from 25-75%. This soil has severe limitations for equipment due to slope and low strength. It is recommended that any road construction follow contours or land shaping may be employed. This complex is well drained with a low available water capacity. Although unsuited for urban development due to slope and depth to bedrock, it is well suited for trees. This soil holds a 70 site index for northern red and black oak and woodland ordination symbol of 3f.

WmC-Wellston
It is found along the main ridge in the south east corner of tract. It is a deep, well drained, moderately permeable soil on loess-covered uplands. This has only slight concerns for woodland management and productivity. Wellston has a woodland ordinantion symbol of 2o and a site index of 90 for yellow poplar.
Cu-Cuba
This soil occupies a small area in the bottomlands of the northwest corner of tract. Cuba typically forms in acid silty alluvium on flood plains. Slopes ranges from 0-2%.They are deep, well drained, and moderately permeable. This soil has only slight concerns for woodland management and productivity. Cuba has a woodland ordination number of 1o and a site index of 100 for yellow poplar.

Access
This tract is accessible from the east via a firelane that connects to Sewell Road. Some improvement work is needed to bring road up to standard. Other routes are being pursued.

Boundary
Both the south and east lines of tract abut state forest while the north and west lines of tract also serve as property lines. These lines are up to date as they were repainted during the 2008/2009 fiscal year.

Wildlife
This tract provides a wealth of wildlife habitat in the form of hard mast. Steady water sources are available nearby from Brummett's Creek. During the 2010 inventory numerous songbirds, coyotes, turkey, pileated woodpecker, box turtles, grey tree frog, and white-tailed deer were observed. The natural heritage database did not report any rare, threatened, or endangered animals within tract boundaries, however a sighting of a timber rattler was observed <1 mile to the east.

Indiana Bat Guidelines
The Indiana Division of Forestry recognizes the potential to enhance the Indiana bat habitat on its lands by implementing comprehensive management principles. These management principles include obtaining data on size, species, and numbers of snags trees. Snag trees and some specific species are an integral part of the Indiana bat policy as they are prime roosting sites for maternal colonies.

Table 2. Live Legacy Trees* inventoried May 2010 on 6371727

Size Classes	Maintenance Level	Inventory	Available For Removal
11"+ DBH	639	1670	1031
20"+ DBH	213	432	219

**** Species Include:*** *American Elm, Bitternut Hickory, Black Locust, Cottonwood,, Green Ash, Northern Red Oak, Post Oak, Red Elm, Shagbark Hickory, Shellbark Hickory, Silver Maple, Sugar Maple, White Ash, White Oak*
These species of trees, whether dead, dying, or alive have a relative high value as potential Indiana Bat roost trees and are encouraged for conservation.

Table 3. Snag Trees inventoried May 2010 on 6371727

Size Classes	Maintenance Level	Optimal Level	Inventory	Available above Maintenance	Available above Optimal
5"+ DBH	284	497	929	639	426
9"+ DBH	213	426	109	-104	-317
19"+ DBH	35.5	71	77	41	6

Table 4. Cavity Trees inventories May 2010 on 6371727

Size Classes	Maintenance Level	Optimal Level	Inventory	Available above Maintenance	Available above Optimal
7"+ DBH	284	426	804	520	378
11"+ DBH	213	284	472	259	188
19"+ DBH	35.5	71	290	255	219

Currently this tract is meeting all guidelines for legacy, cavities, and snags except for 9"DBH+ snags. In terms of landscape ecological management, the neighboring tract reported a surplus of 240 snags in the 9"DBH+ range. Therefore the numbers of snags in this particular area are well represented and this is less of a deficiency and more of a natural fluctuation across the landscape.

Recreation

This tract does not have any established recreational features. Likely uses of this tract include hunting, hiking, wildlife viewing, and gathering. Illegal horse riding was also noted along the tract's main ridge. This activity has destroyed several water diversions causing excessive erosion (down to bedrock in some areas). In highly disturbed areas Japanese stiltgrass is flourishing.

Exotics

Isolated patches of multiflora roase were noted. Stiltgrass was also noted along main ridge in disturbed areas. Accessible areas should be treated during appropriate months.

Cultural

Cultural resources may be present on the tract but upon discovery their location will be protected. Adverse impacts to significant cultural resources will be avoided during any management or construction projects.

Tract Subdivision Description and Silvicultural Prescription

Forest Condition

Currently this stand holds an average of 8,423 BF per acre with 2,418 BF tallied as harvest and 6,005 BF reserved as growing stock. There are 116 square feet of basal area and 42 sawtimber and quality trees per acre. Overall the stand is overstocked at 109%.

Table 5. Harvest/Leave Chart from May 2010 inventory on 6371727

Species	Harvest	Growing Stock	Total
Chestnut Oak	41630	106510	148140
Black Oak	38230	52080	90310
Yellow Poplar	23420	2910	26340
Northern Red Oak	21000	86010	107010
White Oak	14280	104620	118900
Scarlet Oak	11650	15600	27250
White Ash	9140	0	9140
Sugar Maple	4340	20220	24560
Black Cherry	2580	0	2580
Bitternut Hickory	2430	10480	12900
American Beech	1520	3000	4520
Basswood	1460	8500	9960
Black Walnut	0	2910	2910
Chinkapin Oak	0	2090	2090
Pignut Hickory	0	5660	5660
Shagbark Hickory	0	5780	5780
Totals	**171680**	**426370**	**598050**
Totals per Acre	2418	6005	8423

Oak-Hickory

This is the most common strata across the stand comprising about 54 of the tract's 71 acres. This stratum averages about 9,586 BF per acre of which 2,870 is designated as harvestable and 6,715 Bf is growing stock. There are 121 square feet of basal area per acre. This stratum is overstocked at about 113%.

This stratum is dominated by Chestnut, White, and Black oaks. Other dominate trees include Scarlet Oak, Sugar Maple, Pignut Hickory, American Beech, Northern Red Oak, and White Ash. The understory is dominated by shade tolerant Sugar Maple and American Beech. To a lesser extent oak and hickory were also noted. Regeneration is almost completely made up of beech and maple.

In general, the red oak species are experiencing decline from natural senescence and overcrowding. Single tree selection of low vigor, poor formed stems is recommended to release higher quality stems is recommended. Retention in white oak is expected to be high. In areas of poor quality, low basal area, or excessively mature stands, regeneration may be prescribed.

Mixed Hardwoods

This stratum covers about 17 acres of the tract, primarily on northerly facing slopes and coves. It has an average of 5,711BF per acre with 1,362 BF tallied as harvestable and 4,349 BF reserved as growing stock. There are 103 square feet of basal area per acre. This stratum is overstocked at 101%.

The overstory of this unit is made up of Northern Red Oak, Sugar Maple, American Beech, White Ash, Basswood, and Hickory. The understory is overwhelmingly dominated by Sugar Maple along with Hickory, Beech, and Basswood. Regeneration is almost completely beech/maple.

Single tree and group selection cutting methods area recommended for this stratum. Several areas within this stratum were noted to have declining overstories and fire damage. These areas could benefit from regeneration to renew the health of the stand and increase the horizontal heterogeneity across tract. Regeneration of these areas is expected to be mixed, yet heavy in poplar.

Summary Tract Silvicultural Prescription and Proposed Activities
The overall recommendation for this tract is an improvement harvest. Harvest volumes are expected to fall between 150-175 MBF. The harvest will comply with BMP regulations to minimize soil erosion and protect water quality. Prompt installation of water diversions in conjunction with seed and straw following harvesting will be employed to minimize any effects to neighboring water resources. The harvest will entail both single tree and group selection cutting methods. Single tree selection will remove poorly formed, mature stems, and improve spacing of croptrees to increase the growth of residual stand. Group selection will be implemented in stands of inadequate stocking, poor quality, or mature timber. The goal of this harvest will be to create 10% of the tract in regeneration. Following harvest TSI is recommended that any openings or remaining croptree release are completed. This tract will be up for a new management guide/inventory in 20 years.

Proposed Management Activity	*Proposed Date*
Mark Timbersale/Exotic Treatment	2010
Post Harvest TSI & Exotic Recon/Treatment	2012
New Management Guide/Inventory	2020

Attachments (in Tract File)

Gingrich Stocking Charts
Ecological Resource Review
Natural Heritage Database Review
Wildlife Habitat Review
Archeological Clearance/Roadwork Request
Soil, Stand, and Roadwork Maps
TCruise Reports

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