Indiana Department of Natural Resources
Division of Forestry
DRAFT
RESOURCE MANAGEMENT GUIDE

State Forest: Owen-Putnam **Compartment:** 9 **Tract:** 2
Forester: N. Fishburn (R. Duncan) **Date:** July 2013
Management Cycle End Year: 2033 **Management Cycle Length:** 20 Years

Location

Compartment 9, tract 2 is located primarily in the east half of the northwest quarter of section 5, township 10N, range 4W, Morgan Township, Owen County, Indiana. It is approximately 1 mile northwest of Vandalia.

General Description

This tract is a 90-acre sustainably managed, multiple use parcel located in the northern part of the 838 acres contained in compartment 9 of the Owen-Putnam State Forest. Timber types include closed canopy oak-hickory, beech-maple, mixed hardwoods and pine. This area exhibits good opportunities for multiple use management, including timber management, wildlife management, and soil, air and water conservation. It is also a good area for public recreational activities, including hunting, hiking, gathering, viewing and interpretation. This tract is almost completely landlocked by private landowners and must be entered from compartment 9 tract 1 via the fire trail.

History

Owen-Putnam State Forest was established in 1948 with most of its landholdings purchased as smaller non-contiguous tracts in the 1950's and 60's. Compartment 9 tract 2 has been managed for several years. The purchase information of this tract is unknown.

- Property wide timber inventory (TIMPIS) in 1988
- Timber inventory in 2010

Landscape Context

Compartment 9 tract 2 is located in a very rural area surrounded mostly by private land. Predominantly the land in this area is closed canopy deciduous forests with few residences, small fields/pastures, and small ponds located primarily along county roads beyond the state forest.

Topography, Geology and Hydrology

This part of Owen-Putnam State Forest falls in the Shawnee Hills Natural Region, Crawford Upland Section. The region represents presettlement conditions better than any other region in Indiana. This section is most distinct by its rugged hills with sandstone cliffs and rockhouses. Characteristic soils are the well-drained acidic silt loams of the Wellston-Zanesville-Berks Association. The upper slopes consist of an oak-hickory assortment, with a more mesic component in the coves resembling the mixed mesophytic forest community (Homoya et al. 1985).

The topography of this tract varies from level ground in the bottom land, located in the eastern half of the tract, to moderate to steep slopes with mostly eastern aspects making up the remainder of the tract. On the east side of the tract, water sheds generally from west to east through ephemeral drains to the mapped intermittent stream. Generally the soils are composed of moderately deep to very deep, frequently flooded to well drained soils on low to moderately steep slopes underlain with sandstone, siltstone and shale. These soils occur throughout the Illinoian glaciated areas of the county. The soils are comprised of a variety of types. The dominant soils are of the Pope, Tulip, Wellston Adyeville, Zanesville and Tipsaw series. In the event of a harvest, the existing trail system and log yards will be utilized, eliminating the need for new trail construction and minimizing soil disturbance. Indiana Logging and Forestry Best Management Practices (B.M.P.s) will be followed to preserve soil and water quality.

Soils

The tract is composed of the following soils from most to least abundant:

- **PrwAV—Pope fine sandy loam**, 0 to 2 percent slopes, frequently flooded, very brief duration, *Setting*: Flood plains, *Position*: Natural levees and floodplain steps, *Site Index*: Upland oak 80

- **TtcE—Tulip-Wellston-Adyeville silt loams**, 18 to 25 percent slopes, *Setting*: Structural benches and scarps underlain with interbedded sandstone, shale, and siltstone, *Position*: Backslopes and footslopes, *Site Index*: Upland oak 80

- **ZamC3— Zanesville silt loam, soft bedrock substratum**, 6 to 12 percent slopes, severely eroded, *Setting*: Hills underlain with interbedded sandstone, shale, and siltstone, *Position*: Shoulders and backslopes, *Site Index*: Upland oak 69-75

- **TtaG—Tulip-Tipsaw complex**, 25 to 60 percent slopes, *Setting*: Structural benches and scarps underlain with interbedded sandstone, shale, and siltstone, *Position*: Backslopes and footslopes, *Site Index*: Upland oak 70-80

- **StaAV—Steff silt loam**, 0 to 2 percent slopes, frequently flooded, very brief duration, *Setting*: Flood plains, *Position*: Flood-plain steps, *Site Index*: Upland oak 88

- **WhfD2— Wellston silt loam**, 12 to 18 percent slopes, eroded, *Setting*: Hills underlain with interbedded sandstone, shale, and siltstone, *Position*: Backslopes, *Site Index*: Upland oak 81

- **ZamC2—Zanesville silt loam, soft bedrock substratum**, 6 to 12 percent slopes, eroded, *Setting:* Hills underlain with interbedded sandstone, shale, and siltstone, *Position:* Shoulders and Backslopes, *Site Index*: Upland oak 69-75

- **ZapD3— Zanesville, soft bedrock substratum-Tulip silt loams**, 12 to 18 percent slopes, severely eroded, *Setting*: Hills underlain with interbedded sandstone, shale, and siltstone, *Position*: Backslopes, *Site Index*: Upland oak 69-75

- **ZamB2— Zanesville silt loam, soft bedrock substratum**, 2 to 6 percent slopes, eroded, *Setting*: Hills underlain with interbedded sandstone, shale, and siltstone, *Position*: Shoulders and summits, *Site Index*: Upland oak 69-75

- **HccA—Haubstadt silt loam**, 0 to 2 percent slopes, *Setting*: Lake plains, *Position*: Summits, *Site Index*: Upland oak 80

- **SneC3— Solsberry silt loam**, 6 to 12 percent slopes, severely eroded, *Setting*: Dissected till plains, *Position*: Shoulders and Backslopes, *Site Index*: Upland oak 80

- **PryB— Potawatomi silt loam**, 1 to 3 percent slopes, *Setting*: Hills underlain with interbedded sandstone, shale, and siltstone, *Position*: Summits, *Site Index*: Upland oak 80

Access

To access the tract from Spencer, travel west on S.R. 46 approximately 6 miles to Vandalia, turn north on Mangus road approximately 3 miles to the gravel lane accessing compartment 9 tract 1. Parking is located at the end of the gravel drive with a fire trail gate. Follow the fire trail southwest through compartment 9 tract 1 to reach this tract. Management access as well as public recreational access to this tract is more difficult due to this tract being more remote and landlocked.

Boundary

All boundaries of this tract are adjacent to private property, except for the northeast corner. The boundary lines adjacent to private property are designated between the corners M to N, N to O, O to P, and P to M. Corner M has two corners due to the township line being offset. The east corner has a cut off utility pole with a rock at its base to the east. The west corner is marked by a wooden fence post with wire running north and west. Line M to N follows an old fence line. Corner N is a steel fence post. Line N to O is follows a fence line. Corner O is an old cut off utility pole. Line O to P follows an old fence fairly accurately. Corner P is an old fence post wrapped to a hickory tree with barb wire. Line P to M follows a good fence line. The boundary lines were previously marked with orange paint and orange ribbon placed on trees approximately located. The boundary lines were reflagged in 2005. All management activities will be kept an appropriate distance, usually 50-100', from private property.

Wildlife

Wildlife resources in compartment 9 tract 2 seem abundant. Common species or sign observed include Eastern grey squirrel, Eastern fox squirrel, Eastern chipmunks, white-tailed deer, Wild Turkey, Virginia opossum, North American raccoon, Eastern box turtle, raptors, songbirds, woodpeckers, toads, frogs and various small stream aquatic life. This tract contains habitat for a variety of wildlife species.

Live trees in this tract provide for shelter, escape cover, roosting and as a direct (e.g. mast, foliage) or indirect (e.g. foraging substrate, bugging) food resource, with the oaks, hickories, walnuts and beech providing hard mast for deer, turkey and squirrel and the cherries providing soft mast for birds.

Live trees containing cavities in this tract provide nesting and denning opportunities for woodpeckers, songbirds and small mammals and potentially contribute to future snags (standing dead trees).

Snags in this tract provide essential habitat characteristics for foraging activity, nest/den sites, decomposers (e.g., fungi and invertebrates), bird perching and bat roosting, and are important contributors to the future pool of downed woody material.

Rotten logs, crater knolls, ephemeral streams and the mapped streams provide habitat for herptiles and aquatic vertebrates.

The proposed management activities for this tract should not significantly alter the relative proportion and availability of habitat/cover types or significantly disrupt travel/dispersal corridors or create isolated habitat

units separated from larger units of similar habitat. Nor should the proposed management activities increase the likelihood that specialist interior forest species would be affected by generalist species using forest edge habitats. Indiana Logging and Forestry Best Management Practices (B.M.P.s) will be followed to conserve soil and water resources and related forest wildlife habitats, such as springs/seeps, ponds/wetlands and karst features.

Wildlife Habitat Features

According to the data collected during the tract inventory (N. Fishburn 2013) and represented in the following table, this tract is somewhat well represented with habitat in regards to the density, size and species of live and dead trees essential for consideration of various wildlife habitat needs including habitat specialists such as cavity nesters and Species of Greatest Conservation Need like the Indiana bat (Mytolis sodalis) and their suggested habitat requirements.

Legacy trees, as defined by the Management Guidelines for Compartment-Level Wildlife Habitat Features are well represented above the suggested maintenance levels. Legacy trees in the $\geq$ 11" D.B.H. class and $\geq$ 20" D.B.H. class are above the maintenance level. White oak and shagbark hickory are two tree species having preferred characteristics for tree roosting bats. Shagbark hickory is relatively abundant and white oak is somewhat uncommon in this tract. Both species of tree will be given consideration for habitat. Also, as the tract continues to mature, the numbers of > 20" D.B.H. legacy trees are expected to rise.

Standing dead or dying trees (snags) are somewhat well represented in this tract. The snags in this tract are above the maintenance and optimal levels for the $\geq$ 5" D.B.H. class and the maintenance level for the $\geq$ 9" D.B.H. class. However, the snags in the $\geq$ 9" D.B.H. class are below the optimal level and the snags in the $\geq$ 19" D.B.H. class are below the maintenance and optimal levels. The lack of large diameter snags is often attributable to the overall good health of the forest and the short retention of large standing dead trees. Snags have short standing times and often become wind thrown.

Legacy trees, snags and cavity trees will be given consideration for retention as habitat for the Indiana bat and other wildlife as defined by the Resource Management Strategy for the Indiana Bat on State Forest Property and the Management Guidelines for Compartment-Level Wildlife Habitat Features. In addition, the girdling of select cull trees could be performed through post harvest timber stand improvement (T.S.I.) to address the lack of large diameter snags.

Wildlife Habitat Feature Tract Summary

	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
Legacy Trees *					
11"+ DBH	810		2006	1196	
20"+ DBH	270		279	9	
Snags (all species)					
5"+ DBH	360	630	2542	2182	1912
9"+ DBH	270	540	471	201	-69
19"+ DBH	45	90	0	-45	-90

*** Species Include:** AME, BIH, BLL, COT, GRA, REO, POO, REE, SHH, ZSH, SIM, SUM, WHA, WHO

Communities

Most of this tract is of the dry-mesic upland forest community type, with some isolated more mesic sites located along lower north slopes, and some floodplain along streams. The dry-mesic upland forest community has moderate soil moisture with trees growing well, however the canopy is usually more open than in mesic forests. It is one of the most prevalent forest communities in Indiana. It occurs on slopes throughout the state. The dominant plants in this community are the white oak (Quercus alba), Northern red oak (Quercus rubra) and black oak (Quercus velutina). Characteristic plants in this community are the shagbark hickory (Carya ovata), mockernut hickory (Carya tomentosa), flowering dogwood (Cornus florida), hop hornbeam (Ostrya virginiana) and black haw (Viburnum prunifolium). Characteristic animals in this community are the broad-headed skink (Eumeces laticeps), white-footed mouse (Peromyscus leucopus) and eastern chipmunk (Tamias striatus) (Jacquart et al. 2002).

A Natural Heritage Database Review is part of the management planning process. If Rare, Threatened or Endangered species were identified for this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

An exotic/invasive species, multi-flora rose (Rosa multiflora), is present in and around this tract in patches of light to heavy densities. Control measures should be considered, possibly during post-harvest T.S.I., to treat problem occurrences.

Recreation

This tract is a 90-acre sustainably managed, multiple use parcel located in the northwest corner of the 838 acres contained in compartment 9 of the Owen-Putnam State Forest. Public access to this tract is good. This tract can be accessed through the cable gate and fire trail for compartment 9 tract 1, located off Mangus road. It is a good tract for public recreational activities including hunting, hiking, gathering, viewing and interpretation. Because of its parking and walkable fire trail, it is an ideal spot for anyone looking for an accessible outdoor experience.

Cultural

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

Tract Description and Silvicultural Prescription

This tract was not subdivided (non-stratified).

In 1988 a property wide timber inventory (TIMPIS) was conducted, including compartment 9 tract 2 (M. Calvert & D. Smith). The results estimated the tract to contain 2,137 bd. ft. of total sawtimber per acre, including 550 bd. ft. of harvest sawtimber per acre with a total basal area (trees $\geq$ 6" d.b.h.) of 68 sq. ft. per acre and 157 trees $\geq$ 6" d.b.h. per acre.

In 2010 a routine timber inventory was conducted (J. Dye). The data estimated the tract to contain 5,243 bd. ft. of total sawtimber per acre, including 415 bd. ft. of harvest sawtimber per acre with 112 sq. ft of total basal area per acre and a stocking level of 97%.

Various timber types can be found on this tract. They are oak-hickory, beech-maple, mixed hardwood and pine. The over-story consists mostly of medium to large sawlog sized hickory, yellow-poplar, oak, sweetgum, sugar maple, American sycamore, and white ash; with shortleaf pine dominating the pine stands. The quality of merchantable timber is good with the ridge tops and upper slopes containing more of the mixed hardwoods, and

the mid to lower slopes containing more of the oak-hickory. The pole-sized under-story consists mostly of sweetgum, sugar maple, yellow-poplar, hickory, sassafras, black cherry, red maple, American sycamore, white ash, and black walnut; with shortleaf pine dominating the pole sized understory in the pine stand. Advanced regeneration is represented mostly by American beech, white ash, sugar maple, sassafras, pawpaw, Northern red oak, and hickory. Management should include the release of advance regeneration by providing sunlight and space for less shade tolerant species like oak.

The current stocking level of 96% indicates the tract is fully stocked. When a stand reaches overstocking, it creates a crowded forest where individuals are overly competing for resources which reduces tree vigor and quality. However, this tract has a low amount of harvestable sawtimber volume. The 2010 inventory (J. Dye), estimated the tract to contain 415 bd. ft. of harvest sawtimber per acre. This tract should be given time to gain more volume before a timber harvest is recommended. The tract should be reassessed in 10 years.

Management in the form of Timber Stand Improvement (T.S.I.) could be performed to release preferred, high quality crop trees through the culling of low volume, poorly formed trees and less desirable species, and to encourage early successional (oak) regeneration through the creation of canopy gaps and a reduction in understory shade tolerant species (sugar maple and American beech). T.S.I. could be performed whereby mechanical methods and herbicides would be applied to treat the occurrences of multi-flora rose before the populations expand. Standing dead trees (snags) and cavity trees will be given consideration for retention as habitat for wildlife. Legacy trees, as defined by the Resource Management Strategy for the Indiana Bat on State Forest Property, will be given consideration for retention as habitat for the Indiana Bat. In addition, the girdling of select, larger diameter cull trees could be performed through T.S.I. to address the Management Guidelines for Compartment-Level Wildlife Habitat Features.

The overall goal of this silvicultural prescription is to improve timber growth and quality, species composition, and create favorable growing conditions for early successional timber species, while providing forest wildlife habitat.

Proposed Management Activities

2023 ---------- Timber Inventory
2023 ---------- Resource Management Guide

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