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

State Forest: Owen-Putnam **Compartment:** 6 **Tract:** 1
Forester: N. Fishburn (R. Duncan) **Date:** July 2013
Management Cycle End Year: 2033 **Management Cycle Length:** 20 Years

Location

Compartment 6, tract 1 is located primarily in the west half of the northeast quarter of section 21, with a small portion of the tract in the northwest quarter of the southeast quarter in the same section, township 11N, range 4W, Morgan Township, Owen County, Indiana. It is located approximately 1 mile east of Atkinsonville.

General Description

This tract is a 71-acre sustainably managed, multiple use parcel located in the northern part of the 701 acres contained in compartment 6 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. Because of its close proximity to roads and parking, it is an ideal spot for anyone looking for a more accessible outdoor experience.

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 6 tract 1 has been managed for several years. This tract was created out of a 108-acre purchase in 1953 from John Dowdall and Treva Pauline Dowdall.

- Property wide timber inventory (TIMPIS) in 1988
- Timber inventory in 1991
- Timber harvest in 1992
- Timber inventory in 2009
- Timber inventory in 2013

Landscape Context

Compartment 6 tract 1 is located in a rural area surrounded mostly by private land. Predominantly the land in this area is closed canopy deciduous forests, with some scattered residences including some small fields/pastures and small ponds located primarily along county roads near 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 at 900 feet above sea level on the ridge top, located in the central and eastern part of the tract to bottom land at 700 feet above sea level, located in the southern part of the tract, with moderate to steep slopes of northern to western to southern aspects making up the remainder of the tract. Water sheds generally from east to west through ephemeral drains to a mapped intermittent stream that forms the boundary between this tract and compartment 6 tract 2 to the west. Generally the soils are composed of very deep, moderately drained to well drained soils on low to 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 Hickory, Wellston, Tulip, Adyeville, and Solsberry series. In the event of a harvest, the existing skid trail system and log yard(s) 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:

- **HeuF—Hickory-Wellston silt loams,** 25 to 35 percent slopes, *Setting:* Dissected till plains over interbedded shale, siltstone, and sandstone, *Position:* Backslopes, *Site Index*: Upland oak 85

- **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

- **SneD2—Solsberry silt loam,** 12 to 18 percent slopes, eroded, *Setting:* Dissected till plains, *Position*: Backslopes, *Site Index*: Upland oak 80

- **AloB2—Ava silt loam,** 2 to 6 percent slopes, eroded, *Setting:* Dissected till plains, *Position:* Shoulders and summits, *Site Index*: Upland oak 75-80

- **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

- **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

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

- **SneD3—Solsberry silt loam,** 12 to 18 percent slopes, severely eroded, *Setting*: Dissected till plains, *Position*: Backslopes, *Site Index*: Upland oak 80

- **HeuE—Hickory-Wellston silt loams**, 18 to 25 percent slopes, *Setting*: Dissected till plains over interbedded sandstone, shale, and siltstone, *Position*: Backslopes and footslopes, *Site Index*: Upland oak 80

- **OfcAV—Oldenburg fine sandy loam,** sandy substratum, 0 to 2 percent slopes, frequently flooded, very brief duration, *Setting:* Flood plains, *Position:* Flood-plain steps, *Site Index*: Upland oak 85

- **SneD5—Solsberry silt loam**, 12 to 18 percent slopes, gullied, *Setting*: Dissected till plains, *Position*: Backslopes, *Site Index*: Upland oak 80
- **CkkB2—Cincinnati silt loam,** 2 to 6 percent slopes, eroded, *Setting*: Dissected till plains, *Position:* Summits and shoulders, *Site Index*: 80

Access

To access the tract from Spencer, travel west on S.R. 46 approximately 4 miles to Fishcreek road, continue north on Fishcreek road approximately 5 miles to Atkinsonville road. Travel west on Atkinsonville road approximately a half mile to this tract. The tract is on the north side of the road. Parking is located along Atkinsonville road at the mountain bike trail head. Management access as well as public recreational access to this tract is good via the county road and state forest parking lot.

Boundary

The northern and eastern boundary lines are adjacent to private property. The northwestern boundary line is adjacent to compartment 6 tract 2B. The southwestern boundary line is adjacent to compartment 6 tract 2A. The southern boundary line is adjacent to compartment 6 tract 4. The boundary lines adjacent to private property are designated between the corners S to T, T to A, A to B, B to C, C to D, D to E, E to F, F to G. Corner A is a wood post. Line A to B is an old fence line. Corner B is a stake (surveyed by Dorman) and a 2" pipe. Line B to C has old fence wire and a furrow. Corner C is an old wood post. Line C to D has old fence wire and a furrow. Corner D has a stake (surveyed by Dorman) and a fence post. Line D to E has several steel posts south of the line. Corner E has a steel post and a ½" rebar. Line E to F has several steel posts west of the line, especially on the south end. Corner F has a stake (surveyed by Dorman) and a steel post. The boundary lines were previously marked with orange paint and/or orange ribbon placed on trees approximately located. The boundary lines were repainted and reflagged in 2005, except line S to T. All management activities will be kept an appropriate distance, usually 50-100', from private property.

Wildlife

Wildlife resources in compartment 6 tract 1 seem abundant. Common species or sign observed include Eastern grey squirrel, Eastern fox squirrel, Eastern chipmunk, 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 intermittent stream 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 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. White oak and shagbark hickory are two tree species having preferred characteristics of tree roosting bats. White oak and shagbark hickory are relatively abundant and will be given consideration for habitat. Also, as the tract continues to mature, the number of legacy trees $\geq$ 20" D.B.H. is expected to rise.

Standing dead or dying trees (snags) are somewhat well represented in this tract. The snags in the $\geq$ 5" D.B.H. class and the $\geq$ 9" D.B.H. class in this tract are above the maintenance level and below the optimal level. 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	639		1848	1209	
20"+ DBH	213		398	185	
Snags (all species)					
5"+ DBH	284	497	458	174	-39
9"+ DBH	213	426	292	79	-134
19"+ DBH	35.5	71	6	-29	-65

*** 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 etal. 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 moderate to heavy densities. Control needs should be re-assessed, possibly during post-harvest T.S.I., to treat occurrences of concern.

Recreation

This tract is a 71-acre sustainably managed, multiple use parcel located in the north part of the 701 acres contained in compartment 6 of the Owen-Putnam State Forest. This tract contains a portion of the horse/mountain bike trail. Public access to this tract is very good. This tract can be accessed through the cable gate and fire trail, located at the mountain bike trail head parking lot along Atkinsonville road. Also, horse riders can access the tract via the horse trail out of the horse campground. It is a good tract for public recreational activities including hunting, hiking, horse riding, bike riding, gathering, viewing and interpretation. Because of its parking, walkable fire trail and recreational 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 6 tract 1 (D. Cole & R. Winks). The results estimated the tract to contain 4,178 bd. ft. of total sawtimber per acre, including 1,032 bd. ft. of harvest sawtimber per acre with a total basal area (trees $\geq$ 6" d.b.h.) of 91 sq. ft. per acre and 136 trees $\geq$ 6" d.b.h. per acre.

In 1991 a routine timber inventory was conducted (J. Gagnon). The data estimated the tract to contain 5,761 bd. ft. of total sawtimber per acre, including 2,248 bd. ft. of harvest sawtimber per acre with 102 sq. ft. of total basal area per acre, 75 sq. ft. of total basal area per acre for trees sized 10" and larger, and a stocking level of 90%.

In 1992 a timber harvest (Crone Lumber Company, Inc.) occurred on 55 acres of this tract. Yellow-poplar (19,629 bd ft), Northern red oak (16,235 bd ft), white oak (14,391 bd ft), and hickory (13,123 bd ft) comprised the majority of the 98,206 board feet marked for sale.

In 2009 a routine timber inventory was conducted (J. Bauer). The data estimated the tract to contain 4,060 bd. ft. of total sawtimber per acre, including 690 bd. ft. of harvest sawtimber per acre with 110 sq. ft of total basal area per acre and a stocking level of 97%.

In 2013 a routine timber inventory was conducted (N. Fishburn). The data estimated the tract to contain 7,734 bd. ft. of total sawtimber per acre, including 2,851 bd. ft. of harvest sawtimber per acre with 122 sq. ft of total basal area per acre and a stocking level of 99%.

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, oak, yellow-poplar, American beech, red maple, sugar maple, sassafras; with Virginia pine and Eastern white 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 hickory, sassafras, American beech, sugar maple, oak, red maple, and yellow-poplar; with Virginia pine dominating the pole sized understory in the pine stand. Advanced regeneration is represented mostly by American beech, sassafras, hickory, and white ash.

The current stocking level of 99% 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. Therefore, a timber harvest is recommended within the next two years. By the employment of good forest stewardship, timber that has a substantial commercial value may be removed in a manner that benefits the growth of saplings and other trees by thinnings, improvement cuttings, and harvest processes and at the same time provides a source of revenue to the state and counties and provides local markets with a sustainable source of building material. Overall, much of the timber is mature or reaching maturity with excessive competition for resources taking place. Some areas could benefit from the removal of less desirable species such as maple, beech and sassafras in an effort to improve the overall tract quality and species composition.

The recommendation is to perform an intermediate cutting in the form of a thinning and improvement cut utilizing the single tree and group selection methods within the un-even aged management system. A thinning should be done to reduce competition and mortality amongst the overcrowded timber. An improvement cut should be done to improve the overall species composition and quality of the tract by harvesting the low quality, damaged, diseased, dying and poorly formed trees as well as harvesting less desirable species. Management should include the release of advance regeneration by providing sunlight and space for less shade tolerant species like oak. In some areas, a shelterwood-type situation may be created as trees are removed from the intermediate and understory layers while larger dominant and co-dominant trees (especially where oak is a strong component) are left standing. This will allow more diffuse sunlight to reach the ground and improve the establishment and survival of oak seedlings. Group selection openings may also be created to remove groups of undesirable species, poor quality or over mature individuals and to promote early successional tree regeneration. In combination, these silvicultural methods will reduce stand density; improve overall growing conditions and timber quality, while encouraging early successional regeneration, oak recruitment and tree species diversity.

Management in the form of Timber Stand Improvement (T.S.I.) should be performed post-harvest 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) regeneration and oak recruitment where applicable through the creation of canopy gaps, regeneration openings and a reduction in understory shade tolerant species (sugar maple and American beech). Post-harvest treat problem occurrences of multi-flora rose. 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 post-harvest 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 quality and species composition, and create favorable growing conditions for early successional timber species and oak recruitment, while providing forest wildlife habitat.

Inventory Summary – C6T1

Total Number Trees/Acre: 157 **Average Tree Diameter:** 11.9"
Average Site Index: 80 **Stocking Level:** 99%

	Acres		Sq.Ft./Acre
Hardwood Commercial Forest:	66	**Basal Area Sawtimber.**	87.5
Pine Commercial Forest:	4	**Basal Area Poles:**	31.9
Noncommercial Forest:	0	**Basal Area Culls:**	1.2
Permanent Openings:	1	**Sub Merch.**	1.1
Other Use:			
Total:	71	**Total Basal Area:**	121.7

Estimated Tract Volumes for Commercial Forest Area – Bd.Ft. Doyle Rule

***** Slight approximation due to software rounding

Species	Harvest Stock	Growing Stock	Total Volume
YEP	1,218	826	2,044
REO	109	961	1,070
WHO	95	848	943
AMB	455	234	689
SHH	0	464	464
SUM	289	143	432
REM	101	246	348
WHA	328	0	328
WHP	0	302	302
PIH	18	274	292
BIH	0	223	223
SAS	73	86	159
VIP	0	116	116
BLG	92	0	92
LAA	73	0	73
BLC	0	65	65
AME	0	24	24
BAS	0	24	24
SLM	0	24	24
BLL	0	22	22
***Per Acre Total**	2,851	4,883	7,734
***Tract Total**	202,450	346,660	549,110

Proposed Management Activities

2013 ---------- Timber Inventory
2013 ---------- Resource Management Guide
2013 ---------- DHPA Archaeological Clearance Application
2013/14 ---------- Timber Marking and Sale Layout
2013/14 ------- Timber Sale/Harvest
2014/15 ---------- Post-Harvest TSI and Exotic/Invasive Control
2014 ---------- BMP Monitoring
2033 ---------- Timber Inventory
2033 ---------- Resource Management Guide

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