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

**State Forest:** Owen-Putnam **Compartment:** 4 **Tract:** 6
**Forester:** N. Fishburn (R. Duncan) **Date:** May 2013
**Management Cycle End Year:** 2033 **Management Cycle Length:** 20 Years

## Location

Compartment 4, tract 6 is located in the east part of section 8 and the west part of section 9, township 11N, range 4W, Jackson Township, Owen County, Indiana. It is approximately 3 ½ miles Southwest of Cataract.

## General Description

This tract is an 85-acre sustainably managed, multiple use parcel located in the northern part of the 1440 acres contained in compartment 4 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 Rattlesnake campground, 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 4 tract 6 has been managed for several years. This tract was created out of purchases from two landowners. A parcel of land was purchased in 1959 from Charles and Nettie Dale. Another parcel of land was purchased in 1963 from the Maja, Siergiej, and Gorski families.

- Property wide timber inventory (TIMPIS) in 1988
- Timber inventory in 1992
- Timber harvest in 1993
- Timber inventory in 2010

## Landscape Context

Compartment 4 tract 6 is located in a very rural area surrounded almost entirely by other tracts of the same compartment. Predominantly the land in this area is closed canopy deciduous forests, with few residences including some small fields/pastures and small ponds located primarily along county roads well beyond the state forest.

## Topography, Geology and Hydrology

The topography of this tract varies from level ground on the ridge top, located in the center of the tract, to moderate to steep slopes making up the remainder of the tract. The slopes run north and south with aspects facing east and west. On the east side of the tract, water sheds generally from west to east through ephemeral

drains to a mapped intermittent stream that flows north into Jordan Creek, a mapped perennial stream. On the west side of the tract, water sheds generally from east to west through ephemeral drains directly into Jordan Creek. Generally the soils are composed of moderately deep to very deep, moderately drained to well drained soils on low to steep slopes underlain with sandstone, siltstone and shale. Along the mapped intermittent stream that forms the eastern boundary the soil is somewhat poorly drained. 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 Tulip, Tipsaw, and Zanesville series. These soils occupy the slopes of which this tract is predominantly made. They can produce good timber with the other soils located in the tract often well suited to timber production. 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:

- **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
- **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
- **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
- **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
- **GabG—Gallimore-Chetwynd complex**, 25 to 70 percent slopes, *Setting*: Dissected outwash plains, *Position*: Backslopes, *Site Index*: Upland oak 88-98
- **HleAV—Holton silt loam**, 0 to 2 percent slopes, frequently flooded, very brief duration, *Setting*: Floodplains, *Position*: Flood-plain steps, *Site Index*: Upland oak 80-85
- **OfaAV—Oldenburg silt loam**, 0 to 2 percent slopes, frequently flooded, very brief duration, *Setting*: Floodplains, *Position*: Flood-plain steps, *Site Index*: Upland oak 90

**Access**

To access the tract from Spencer, travel west on S.R. 46 approximately 3 miles to Rattlesnake road, continue north on Rattlesnake road approximately 6 miles to Surber road, continue west on Surber road to Rattlesnake campground and the cable gate and fire trail at the back of the campground. Management access as well as public recreational access to this tract is very good via the campground and fire trail.

**Boundary**

The majority of the northern boundary line is adjacent to tract 5. The northwestern part of the northern boundary of this tract is adjacent to private property. The eastern boundary is adjacent to tract 11 and is identified by a mapped intermittent stream that flows north into Jordan Creek. The south boundary is adjacent to tract 7. The west boundary is adjacent to tract 4. The boundary lines adjacent to private property are designated between the corners ZB and ZC (see attached boundary map). Corner ZB is unidentified. According to the tract files corner ZC is identified approximately as a fence intersection with an old sign and newer sign posted. The tract files does not contain any information on the boundary line having been surveyed, therefore the line was previously marked with orange paint and/or orange ribbon placed on trees approximately located. All management activities will be kept an appropriate distance, usually 50-100', from private property.

**Wildlife**

Wildlife resources in compartment 4 tract 6 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.

There are three springs in compartment 4 tract 6. The springs will be flagged and have a buffer zone established around them to prevent any disturbance from management activities.

**Wildlife Habitat Features**

According to the data collected during the tract inventory (J. Dye 2010) 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. White oak and shagbark hickory are two tree species having preferred characteristics for tree roosting bats. White oak is relatively abundant. Shagbark hickory is not very abundant and will be given consideration for habitat. Also, as the tract continues to mature, the number of legacy trees $\geq$20" in diameter at breast height (D.B.H.) is expected to rise.

Standing dead or dying trees (snags) are not well represented in this tract. They are below the maintenance and optimal levels in all diameter classes, except the small $\geq$ 5" D.B.H. class. 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.

Cavity trees are not well represented in all diameter classes at the maintenance and optimal levels possibly due to the inventory being conducted during leaf on, which can impede vision. Snags and legacy should develop cavities in time.

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*** | 765 | | 1613 | 848 | |
| ***20"+ DBH*** | 255 | | 485 | 230 | |
| **Snags (all species)** | | | | | |
| ***5"+ DBH*** | 340 | 595 | 1784 | 1444 | 1189 |
| ***9"+ DBH*** | 255 | 510 | 169 | -86 | -341 |
| ***19"+ DBH*** | 42.5 | 85 | 31 | -11 | -54 |
| **Cavity Trees (all species)** | | | | | |
| ***7"+ DBH*** | 340 | 510 | 208 | -132 | -302 |
| ***11"+ DBH*** | 255 | 340 | 208 | -47 | -132 |
| ***19"+ DBH*** | 42.5 | 85 | 28 | -14 | -57 |

*** 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 forest community type, with some isolated more mesic sites located along lower north slopes, and some floodplain occurring along the intermittent stream.

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.

## Recreation

This tract is an 85-acre sustainably managed, multiple use parcel located in the northwest corner of the 1440 acres contained in compartment 4 of the Owen-Putnam State Forest. Public access to this tract is very good. This tract can be accessed through the cable gate and fire trail located at the back of Rattlesnake campground. It is a good tract for public recreational activities including hunting, hiking, gathering, viewing and interpretation.

Because of its close proximity to the campground and walkable fire trail, it is an ideal spot for anyone looking for an easily 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 divided into subdivisions (non-stratified).

In 1988 a property wide timber inventory (TIMPIS) was conducted, including compartment 4 tract 6 (M. Calvert). The results estimated the tract to contain 5,603 bd. ft. of total sawtimber per acre, including 1,982 bd. ft. of harvest sawtimber per acre with a total basal area (trees $\geq$ 6" d.b.h.) of 100 sq. ft. per acre and 136 trees $\geq$ 6" d.b.h. per acre.

In 1992 routine timber inventory was conducted (J. Allen). The data estimated the tract to contain 8,732 bd. ft. of total sawtimber per acre, including 4,610 bd. ft. of harvest sawtimber per acre with 106 sq. ft. of total basal area per acre and a stocking level of 98%. A harvest was conducted in 1993.

In 2010 another routine timber inventory was conducted (J. Dye). The data estimated the tract to contain 12,692 bd. ft. of total sawtimber per acre, including 3,526 bd. ft. of harvest sawtimber per acre with 120 sq. ft of total basal area per acre and a stocking level of 103 %.

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 yellow poplar, oak, hickory, American beech and maple with some black walnut in the bottoms and eastern white pine and Scots 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 pine, and the mid to lower slopes containing more of the oak-hickory. The pole-sized under-story consists mostly of sugar maple, red maple, sassafras, yellow poplar, American beech, northern red oak and blackgum with Scots pine dominating the pole sized understory in the pine stand. Advanced regeneration is represented mostly by sugar maple, American beech, sassafras, white ash and pawpaw. Dogwood and yellow-poplar advance regeneration were well represented but not as common. Oak regeneration was not well represented in the advanced stages.

The current stocking level of 103% indicates the tract is over stocked. Overstocking 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 husbandry, 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 further 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. 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 or poor quality 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 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 through the creation of canopy gaps, regeneration openings and a reduction in understory shade tolerant species (sugar maple and American beech). Pre-harvest T.S.I. should be performed to control a moderate to heavy presence of grape vines. Very little invasive species were found during inventory and should not need management control. 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 should 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, while providing forest wildlife habitat.

**Inventory Summary –** C4T6

**Total Number Trees/Acre:** 210 **Average Tree Diameter:** 10”
**Average Site Index:** 75 **Stocking Level:** 103%

| | Acres | | Sq.Ft./Acre |
|---|---|---|---|
| **Hardwood Commercial Forest:** | 75 | **Basal Area Sawtimber.** | 96.1 |
| **Pine Commercial Forest:** | 10 | **Basal Area Poles:** | 15.0 |
| **Noncommercial Forest:** | 0 | **Basal Area Culls:** | 2.8 |
| **Permanent Openings:** | 0 | **Sub Merch.** | 6.4 |
| **Other Use:** | | | |
| **Total:** | 85 | **Total Basal Area:** | 120.3 |

**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** | 1296 | 3320 | 4616 |
| **REO** | 370 | 1055 | 1425 |
| **WHO** | 115 | 734 | 849 |
| **BLO** | 216 | 628 | 844 |
| **AMB** | 312 | 481 | 793 |
| **WHP** | 115 | 659 | 774 |
| **MOH** | 192 | 344 | 536 |
| **WHA** | 430 | 24 | 454 |
| **SUM** | 0 | 428 | 428 |

| | | | |
|---|---|---|---|
| **BIH** | 51 | 376 | 427 |
| **SAS** | 276 | 147 | 423 |
| **SHH** | 0 | 392 | 392 |
| **SYC** | 0 | 185 | 185 |
| **REM** | 71 | 87 | 158 |
| **PIH** | 0 | 144 | 144 |
| **BAS** | 75 | 0 | 75 |
| **SCP** | 0 | 68 | 68 |
| **BLW** | 0 | 19 | 19 |
| **BLC** | 7 | 0 | 7 |
| ***Per Acre Total** | 3,526 | 9,166 | 12,692 |
| ***Tract Total** | 299,950 | 779,040 | 1,079,000 |

**Proposed Management Activities**

2010 ---------- 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
2030 ---------- Timber Inventory
2033 ---------- Resource Management Guide

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