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

State Forest: Owen-Putnam **Compartment:** 5 **Tract:** 1
Forester: N. Fishburn (R. Duncan) **Date:** May 2013
Management Cycle End Year: 2033 **Management Cycle Length:** 20 Years

Location

Compartment 5, tract 1 is located in the southeast part of section 10 and northeast part of section 15, township 11N, range 4W, Jennings and Morgan Townships, Owen County, Indiana. It is approximately 2 miles Southwest of Cataract.

General Description

This tract is a 75-acre sustainably managed, multiple use parcel located in the northern part of the 610 acres contained in compartment 5 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. This tract contains Corns Ridge. 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 an 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 5 tract 1 has been managed for several years. This tract was created out of an 80 acre parcel purchased in a 200 acre bundle from Amos Bedwell in 1947.

- Timber inventory in 1975 (data N/A)
- Timber inventory in 1985 (data N/A)
- Timber harvest in 1988
- Property wide timber inventory (TIMPIS) in 1988
- Timber inventory in 1991
- Timber harvest in 1992
- Timber inventory in 2009

Landscape Context

Compartment 5 tract 1 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 including some small fields/pastures and small ponds located primarily along county roads near the state forest.

Topography, Geology and Hydrology

Owen-Putnam State Forest falls in the Shawnee Hills Natural Region, Crawford Upland Section. 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 on the ridge top, located in the center of the tract, to moderate to steep slopes making up the remainder of the tract. Generally, the slopes run northeast, southeast, and southwest with aspects facing east, south, and northwest. On the east side of the tract, water sheds generally from west to east through ephemeral drains to a mapped intermittent stream. On the south side of the tract, water sheds generally from north to south through ephemeral drains to the mapped intermittent stream along Surber road. On the northwest side of the tract, water sheds generally south to north through ephemeral drains to a mapped intermittent stream. There is a pond located in the south west section of the main ridge top (Corns Ridge). 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. 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 Potawatomi, Tulip, Tipsaw, and Zanesville 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:

- **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

- **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

- **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

- **ZamD5—Zanesville silt loam, soft bedrock substratum,** 12 to 18 percent slopes, gullied, *Setting*: Hills underlain with interbedded sandstone, shale, and siltstone, *Position*: Backslopes, *Other features*: Between 25 and 40 percent of this map unit is gullied. The gullied areas consist of a network of mostly U-shaped channels averaging 2 to 4 feet in depth. *Site Index*: Upland oak 69-75

- **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

- **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

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

- **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

- **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 3 miles to Rattlesnake road, continue north on Rattlesnake road approximately 6 miles to Surber road, continue west on Surber road approximately 2 miles to the small parking lot and cable gate on the north/left side of the road. The tract is directly north of compartment 5 tract 2 which is on the north side of Surber road. Parking is located along both the north and south sides of Surber road. Management access as well as public recreational access to this tract is good via the county road, parking areas and access trail.

Boundary

The northern, eastern, western, and southwestern boundary lines are adjacent to private property. The southeastern boundary line is adjacent to compartment 5 tract 2. The boundary lines adjacent to private property are designated between the corners O to P, P to Q, Q to 4W, 4W to A, and A to B. Corner O is a metal stake next to a 3 forked red maple, there is an old forest boundary sign on the maple tree. Line O to P borders an old field with an old fence on or near the property line. Corner P is a questionable corner. Corner Q has a metal boundary sign, a steel post and a questionable stone. Line Q to 4W closely follows an old fence. Corner 4W has a steel post surrounded by 3 rocks in an old north-south fence. Corner 4W has compartment 4 tract 15 to the northwest with private land to the southwest and northeast. Line 4W to A was surveyed in 1992 by Harlos for Westin Paper Company and a steel post was set along the line. Corner A has stone #7, steel post and treated timber, and barbed wire east and south between trees. Line A to B is a good line with remnants of old barbed wire fence on or near the line. Corner B has 3 stones and a steel post marking the corner. The boundary lines were previously marked with orange paint and/or orange ribbon placed on trees approximately located. The boundary lines were repainted in 2002 and reflagged in 2005. All management activities will be kept an appropriate distance, usually 50-100', from private property.

Wildlife

Wildlife resources in compartment 5 tract 1 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 (J. Bauer 2009) 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 in the $\geq$ 11" diameter at breast height (D.B.H.) class above the suggested maintenance levels. Legacy trees in the $\geq$ 20" diameter at breast height (D.B.H.) class are slightly below the maintenance level. White oak and shagbark hickory are two tree species having preferred characteristics for tree roosting bats. Shagbark hickory is fairly abundant in this tract with White oak not being very abundant. Both trees will be given consideration for habitat. Also, as the tract continues to mature, the number of $\geq$ 20" D.B.H. legacy trees is expected to rise.

Standing dead or dying trees (snags) are well represented in this tract. Snags in all size classes are above the maintenance levels, however the $\geq$ 9" D.B.H. class and $\geq$ 19" D.B.H. class fall just short of the optimal level. 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 well represented in all diameter classes at the maintenance and optimal levels in this tract.

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	675		1545	870	
20"+ DBH	225		175	-50	
Snags (all species)					
5"+ DBH	300	525	2582	2282	2057
9"+ DBH	225	450	292	67	-158
19"+ DBH	37.5	75	68	30	-7
Cavity Trees (all species)					
7"+ DBH	300	450	1228	928	778
11"+ DBH	225	300	623	398	323
19"+ DBH	37.5	75	91	53	16

*** 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. 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 low numbers. Need for control measures should be assessed periodically.

Recreation

This tract is a 75-acre sustainably managed, multiple use parcel located in the northwest corner of the 610 acres contained in compartment 5 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, across from the public parking lot, located along Surber road. It is a good tract for public recreational activities including hunting, hiking, gathering, viewing and interpretation. Because of its parking, walkable fire trail and proximity to three intermittent steams, 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).

Inventories were done in 1975 and 1985, however a property wide tract realignment has been done since then to better suit the landscape and therefore the data is not applicable to this tract anymore.

In 1988 a property wide timber inventory (TIMPIS) was conducted, including compartment 5 tract 1 (M. Calvert). The results estimated the tract to contain 5,429 bd. ft. of total sawtimber per acre, including 2,950 bd. ft. of harvest sawtimber per acre with a total basal area (trees $\geq$ 6" d.b.h.) of 102 sq. ft. per acre and 148 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 7,260 bd. ft. of total sawtimber per acre, including 3,532 bd. ft. of harvest sawtimber per acre with 98 sq. ft. of total basal area per acre and a stocking level of 105%. Harvests occurred in portions of this tract in 1988 and 1992.

In 2009 a routine timber inventory was conducted (J. Bauer). The data estimated the tract to contain 8,716 bd. ft. of total sawtimber per acre, including 2,670 bd. ft. of harvest sawtimber per acre with 128 sq. ft of total basal area per acre (trees $\geq$ 2" d.b.h.) and a stocking level of 109 %.

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, hickory, maple, white ash, oak, and sassafras; with Eastern white pine and Virginia 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 sassafras, maple, white ash, yellow poplar, oak, and American beech, with Virginia pine and Eastern white pine dominating the pole sized understory in the pine stand. Oak regeneration was present across the tract in light to almost heavy concentrations.

The current stocking level of 109% 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 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 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 and Oak recruitment through the creation of canopy gaps, regeneration openings and a reduction in understory shade tolerant species (sugar maple and American beech). 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 – C5T1

Total Number Trees/Acre: 217 **Average Tree Diameter:** 10.4”
Average Site Index: 75 **Stocking Level:** 109%

	Acres		Sq.Ft./Acre
Hardwood Commercial Forest:	61	**Basal Area Sawtimber.**	88.3
Pine Commercial Forest:	14	**Basal Area Poles:**	22.4
Noncommercial Forest:	0	**Basal Area Culls:**	10
Permanent Openings:	0	**Sub Merch.**	6.9
Other Use:			
Total:	75	**Total Basal Area:**	127.6

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	1,380	3,480	4,860
WHP	50	690	740
REO	0	420	420
SHH	30	390	410
WHA	360	40	400
PIH	200	180	380
REM	150	80	230
BIH	10	200	210
SUM	150	60	210
SAS	120	80	190
WHO	0	150	150
BLO	0	140	140
LAA	120	0	120
BLG	0	80	80
VIP	30	30	60
AES	40	0	40
ZCO	0	30	30
BLC	30	0	30
BLW	0	20	20
***Per Acre Total**	2,670	6,050	8,720
***Tract Total**	199,890	453,820	653,700

Proposed Management Activities

2009 ---------- 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
2014 ---------- BMP Monitoring
2029 ---------- Timber Inventory
2033 ---------- Resource Management Guide

To submit a comment on this document, click on the following link:
http://www.in.gov/surveytool/public/survey.php?name=dnr_forestry

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. Note: Some graphics may distort due to compression.