Indiana Department of Natural Resources
Division of Forestry

DRAFT

Resource Management Guide

State Forest: Owen-Putnam **Compartment:** 2 **Tract:** 3
Forester: R. Duncan **Date:** June 2011
Management Cycle End Year: 2030 **Management Cycle Length:** 20 Years

Location

The majority of compartment 2, tract 3 lies in the east half and south-central half of section 4 with a small portion in the northwest quarter of section 9, township 11N, range 4W, Jennings and Jackson Township, of Owen County, Indiana. It is approximately 2 miles west of the town of Cataract and located along Oak road.

General Description

This tract is a 107-acre sustainably managed, multiple use parcel located along the south west side of the 439 acres contained in compartment 2. Timber types include closed canopy oak-hickory, mixed hardwood 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 ideal for public recreational activities, particularly hunting, but also hiking, gathering, viewing and interpretation. Because of its remote location, it is an ideal spot for anyone looking for a quieter outdoor setting.

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 2 tract 3 has been managed for several years. The tract was created out of 4 parcels that were purchased from 1951 to 1963.

- White pine planting on 12 acres in 1951
- Timber harvest in 1975
- Property wide timber inventory (TIMPIS) in 1988
- Timber inventory in 1991
- Timber harvest in 1991
- Post-harvest timber stand improvement (TSI) to complete a 1 acre regeneration opening in 1992
- Timber inventory in 2010

Landscape Context

Compartment 2 tract 3 is located in a rural area. Adjacent and to the north is tract 1 and to the east is tract 2. To the south is compartment 4 with 1440 acres. The land to the west is privately owned. Predominantly the land is this area is closed canopy deciduous forests with some scattered residences including some small fields/pastures and small ponds located primarily along county roads.

Topography, Geology and Hydrology

The topography of the tract varies from nearly level ground on the ridge tops located in the south-western area of the tract to steep, south facing slopes in the central portion of the tract with riparian areas located along Jordan creek to the south. Water sheds generally from north to south into Jordan creek. To the west of the tract, located on private property, is a lowland riparian area (wetland) that drains into Jordan creek. Generally the soils are composed of shallow to moderately deep, well to excessively drained soils on moderate 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 Parke, Cincinnati and Negley soil series. These soils occupy the ridge tops and adjacent slopes. The Negley soils can produce excellent timber with the Park and Cincinnati soils often well suited to timber production. Particular care must be taken since these soils are prone to erosion. 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:

- PaB - Parke Silt Loam, 2-6% Slopes
- PaB2 - Parke Silt Loam, 2-6% Slopes, Moderately Eroded
- PaC - Parke Silt Loam, 6-12% Slopes
- PcC3 - Parke Soils, 6-12% Slopes, Severely Eroded
- CcB2 - Cincinnati Soils, 2-6% Slopes, Moderately Eroded
- CcC2 - Cincinnati Silt Loam, 6-12% Slopes, Moderately Eroded
- CfC3 - Cincinnati Soils, 6-12% Slopes, Severely Eroded
- NgF - Negley loam, 25-35% Slopes
- NgG - Negley loam, 35-70% Slopes
- NsE3 - Negley Soils, 18-25% Slopes, Severely Eroded
- Sh - Shoals Loam
- So - Stendal Silt Loam

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 Old Cuba Road, continue north on Old Cuba road to Ponderosa road, continue west on Ponderosa road to Cunot-Cataract road, continue west on Cunot-Cataract road to Oak road, continue west on Oak road to the parking lot and fire trail on the south side of Oak road. Management and logging access as well as public recreational access to this tract is very good.

Boundary

The western boundary of this tract is adjacent to private property with the northern, eastern and southern boundaries following dominant topographical features and adjacent to other tracts within the state forest.

The boundary lines adjacent to private property are designated as a line from corner A to corner J, to corner I, to corner H, to corner G (see attached map). Corner A is marked with a stone, a steel post, PK nails and an iron pin with a ring on top. Corner J is marked with a steel post, an old sign and a questionable stone. Corner I is marked with two pipes and an old sign. Corner H is an extension of a fence from the north and east. Corner G is a stone.

Line A to J has been flagged and repainted; with a white stone, a steel post and PK nails found at the center section and another steel post located 20 feet to the east and a blue pipe located 450 feet north of the white

stone. Line J to I has been remarked and follows an old fence. Line I to H has an old furrow and two small posts along it. Line H to G is a curve and should be surveyed. All boundary lines adjacent to private property are well marked with orange paint and/or orange ribbon placed on trees approximately located. Any timber marking or harvest operations will be kept an appropriate distance from these boundary lines.

Wildlife

Wildlife resources in compartment 2 tract 3 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, 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 (Jordan creek) provide habitat for herptiles and aquatic vertebrates.

A Natural Heritage Database review was obtained for this tract. 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.

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. Dye 2010) 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, with white oaks and shagbark hickories particularly abundant in this tract and having ideal characteristics necessary for tree roosting bats. Also, as the tract continues to mature, the number of 20”+ legacy trees is expected to rise.

Standing dead trees (snags) are well represented in this tract. They are above the maintenance and optimal levels in the smaller diameter at breast height (D.B.H.) classes. However, there is some deficiency in $\geq$ 19" D.B.H. class at 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, which often become wind thrown.

Cavity trees are well represented in all diameter classes at the maintenance levels, but fall short in all diameter classes at the optimal levels. It should be noted that this data was collected during leaf on, which impedes vision and could explain or exaggerate the lack of cavity trees above the higher expectations of the optimal levels.

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	Available Inventory	Available Above Maintenance	Residual Above Optimal
Legacy Trees *					
11"+ DBH	963		1660	697	
20"+ DBH	321		513	192	
Snags (all species)					
5"+ DBH	428	749	911	483	162
9"+ DBH	321	642	777	456	135
19"+ DBH	53.5	107	18	-36	-89
Cavity Trees (all species)					
7"+ DBH	428	642	483	55	-159
11"+ DBH	321	428	377	56	-51
19"+ DBH	53.5	107	81	28	-26

*** 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. To the west of this tract, located on private property, is a lowland riparian area (seasonal wetland) often inhabited by beaver with a mapped intermittent stream that drains into Jordan creek. Located within this tract, along the western boundary near the north end of the wetland, is a naturally occurring spring. Management activities will not cross boundaries onto private property and thus in conjunction with the proper use of soil and water conservation B.M.P.'s, should not have any short or long term impacts on these habitats.

A Natural Heritage Database review was obtained for this tract. 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.

One exotic species, multi-flora rose, is present in and around this tract in moderate to heavy densities, mainly along the ridge tops where soil and vegetation disturbances have occurred prior to state ownership. Control measures should be proposed, possibly during post-harvest T.S.I., whereby mechanical methods and herbicides could be applied to treat these occurrences before their populations expand.

Recreation

This tract is a 107-acre sustainably managed, multiple use parcel located along the southwest side of the 439 acres contained in compartment 2. The area is accessible to the public via the parking lot and fire trail on Oak road. Timber types include closed canopy oak-hickory, mixed hardwood and pine. It is ideal for many public recreational activities, particularly hunting, but also hiking, gathering, viewing and interpretation. It is an excellent spot for persons interested in a quiet, remote outdoor experience.

Cultural

Cultural resources may be present on this tract but their location is protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

Tract Description and Silvicultural Prescription

This tract was not divided into subdivisions (non-stratified).

The tract file indicates that a timber harvest took place in 1975 on 32 acres of this tract. However, there are no records of that harvest due to the tract file being destroyed in a fire at Morgan-Monroe State Forest in the early ‘80s.

Between 1988 and 1989 a property wide timber inventory (TIMPIS) was conducted, including compartment 2 tract 3 (D. Smith, M. Calvert). The results estimated the tract to contain 4,427 bd. ft. of total sawtimber per acre, including 1,643 bd. ft. of harvest sawtimber per acre with a total basal area (trees $\geq$ 6” d.b.h.) of 88 sq. ft. per acre and 141 trees $\geq$ 6” d.b.h. per acre.

In 1991 a timber inventory was conducted (J. Allen). The results estimated the tract to contain 7,916 bd. ft. of total sawtimber per acre, including 3,145 bd. ft. of harvest sawtimber per acre, a total basal area of 102 sq. ft. per acre and a stocking level of 98%. As a result, a timber sale was proposed for 1992.

The tract was harvested in 1992 (Sam Cramer Logging) with 108,541 bd. ft. of sawtimber removed in 332 trees on 65 of 107 acres.

In 2010 a timber inventory was conducted (J. Dye). The results estimated the tract to contain approximately 7,651 bd. ft. of total sawtimber per acre, including 3,248 bd. ft. of harvest sawtimber per acre with 123 sq. ft of total basal area per acre and a stocking level of 108 %.

Various timber types can be found on this tract. They are oak-hickory, mixed hardwood and pine. The over-story consists mostly of medium to large sawlog sized yellow poplar, oak, hickory, American beech and maple. The quality of merchantable timber is good with the ridge tops containing more of the mixed hardwoods and the slopes containing more of the oak-hickory. The pole-sized under-story consists mostly of sugar maple, yellow poplar, black cherry, oak, elm and pine. Advanced regeneration is represented mostly by sugar maple, sassafras, dogwood, American beech, black cherry, yellow poplar and northern red oak.

The current stocking level of 108% indicates the tract is overstocked. Therefore, a timber harvest is recommended within the next two years. Overall the timber is 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. 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 regeneration. In combination, these silvicultural methods will reduce stand density; improve overall growing conditions and timber quality while encouraging early successional regeneration.

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 (oak) regeneration through the creation of canopy gaps 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. In addition, an exotic invasive species, multi-flora rose, is present and is moderately thick in some areas. It is also present in larger quantities in the nearby tracts. Both mechanical and chemical treatments could be used to treat and remove this invasive. 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 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 – C2T3

Total Number Trees/Acre: 258
Average Site Index: 85
Average Tree Diameter: 9.8”
Stocking Level: 108%

	Acres		Sq.Ft./Acre
Hardwood Commercial Forest:	95	**Basal Area Sawtimber.**	90.0
Pine Commercial Forest:	12	**Basal Area Poles:**	20.0
Noncommercial Forest:	0	**Basal Area Culls:**	4.3
Permanent Openings:	0	**Sub Merch.**	8.8
Other Use:			
Total:	107	**Total Basal Area:**	123.1

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

* Approximate value due to rounding

Species	Growing Stock	Harvest Stock	*Total Volume
YEP	2654	166	2821
WHP	1319	1151	2471
WHO	1616	216	1833
BLO	705	470	1175

REO	510	77	587
SHH	231	49	280
BLC	0	243	243
AMB	50	160	210
SUM	135	66	201
WHA	13	175	187
SAS	13	171	184
PIH	88	74	162
SYC	68	81	149
MOH	137	0	137
SCP	123	0	123
PIO	0	77	77
BLG	25	40	65
BLW	46	0	46
BIH	55	0	55
BLW	46	0	46
REM	0	32	32
* **Per Acre Total**	7790	3248	11038
***Tract Total**	833,550	347,500	1,181,050

Proposed Management Activities

2010 ----------	Timber Inventory
2011----------	Resource management Guide
2011----------	DHPA Archaeological Clearance Application
2011----------	Timber Marking and Sale Layout
2011/12 -------	Timber Sale/Harvest
2013 ----------	Post-Harvest TSI and Exotic/Invasive Control
2013 ----------	BMP Monitoring
2030 ----------	Timber Inventory
2030 ----------	Resource Management Guide

Attachments (on file in the property office)

1. Timber Inventory Summary Reports (J. Dye, 08/24/2010)
2. Ecological Resource Review (R. Duncan, July 2011)
3. Topographic Map (R. Duncan, August 2011)
4. Soil Type Map (R. Duncan, August 2011)
5. Natural Heritage Database Review (R. Duncan, 08/11/2011)
6. Aerial Photograph (2003)
7. Upland Central Hardwoods Timber Stocking Guide (R. Duncan, August 2011)
8. Archaeological Clearance Application (R. Duncan, August 2011)
9. Archaeological Clearance Letter (A. J. Ariens)

References

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3. Indiana State Forest Resource Management Procedures Manual. 2001. Indiana Department of Natural Resources, Division of Forestry. Indianapolis, IN.

4. Jacquart, E., M. A. Homoya, L. Casebeer. 2002. Natural communities of Indiana. Working draft. Indiana Department of Natural Resources, Division of Nature Preserves. Indianapolis, IN.

5. Indiana State Forests: Environmental Assessment 2008-2027. 2008. Indiana Department of Natural Resources, Division of Forestry. Indianapolis, IN.

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10. New Hampshire Division of Forests and Lands, Natural Communities of NH - Photo Guide

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14. United States Department of Agriculture. Forest Service. timber stocking guide. Northeastern Area NA-MR-7.

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16. United States Geological Survey. Topographical Map. 7.5 Minute Series. Cataract Quadrangle

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