Indiana Department of Natural Resources – Division of Forestry
Draft
Resource Management Guide

State Forest: Owen-Putnam **Compartment:** 3 **Tract:** 5
Forester: R. Duncan **Date:** September 2011
Management Cycle End Year: 2030 **Management Cycle Length:** 20 Years

Location

The majority of compartment 3, tract 5 is located in the northwest quarter of section 10 with a small portion of the tract located in the southwest quarter of section 3, township 11N, range 4W, Jennings Township, Owen County, Indiana. It is approximately 1 mile southwest of the town of Cataract and located along Maze road.

General Description

This tract is an 85-acre sustainably managed, multiple use parcel located in the southwest corner of the 301 acres contained in compartment 3 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 an easily 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 3 tract 4 has been managed for several years. This tract was created out of 3 parcels. 60 acres in the center of the tract were purchased in 1947 from Amos Bedwell. 60 acres to the south were purchased in 1948 from Kenneth & Pauline Welty of which approximately 15 acres is part of tract 5. 160 acres to the north were purchased in 1950 from Harry J. & Effie Robbins of which approximately 10 acres is part of tract 5.

- Timber inventory in 1991
- Timber harvest in 1994
- Property wide timber inventory (TIMPIS) in 1988
- Timber inventory in 2010

Landscape Context

Compartment 3 tract 5 is located in a rural area. Along the north side of this tract is compartment 3 tract 4. The land to the east and west of tract 5 is privately owned. Access to the tract is from Maze road. There are a few residences along Maze road. Adjacent and to the south of tract 5 is compartment 4 with 1440 acres. 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 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. Water sheds generally to the south into a mapped intermittent stream that drains into Jordan creek and to the north into a major ephemeral that also drains into Jordan creek. Generally the soils are composed of moderately deep to deep, moderately drained to well drained soils on moderately steep 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, Chetwynd, Wellston, Holten and Solsberry 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:

- **HesG—Hickory-Chetwynd loams**, 35 to 70 percent slopes, *Setting:* Dissected till plains, *Position:* Backslopes, *Site Index*: Upland oak 85

- **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

- **HleAV—Holton silt loam,** 0 to 2 percent slopes, frequently flooded, very brief duration, *Setting:* Flood plains, *Position:* Flood-plain steps, *Site Index*: Upland oak 80

- **SneC2 - Solsberry silt loam,** 6 to 12 percent slopes, eroded, S*etting:* Dissected till plains, *Position:* Shoulders and Backslopes, *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

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

- **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

- **CkkD2—Cincinnati silt loam,** 12 to 18 percent slopes, eroded, *Setting:* Dissected till plains, *Position:* Backslopes, *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

- **TtaG—Tulip-Tipsaw complex,** 25 to 60 percent slopes, *Setting:* Structural benches and scarps underlain with interbedded sandstone, shale, and siltstone, *Position on the landform:* Backslopes and footslopes, *Site Index*: Upland oak 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 Old Cuba Road, continue north on Old Cuba road to Ponderosa road, continue west on Ponderosa road to Maze road, continue west on Maze road to the parking lot and fire trail on the north side of Maze road. Management and logging access as well as public recreational access to this tract is very good.

Boundary

The eastern and western boundaries of this tract are adjacent to private property, with both the southern and northern boundaries following a stream and adjacent to state property. The eastern boundary line is designated as a line from corner X to corner W* (* located in compartment 4). Corner X has been surveyed (J. Gwinn 2003) and is identified with a 5/8" x 36" capped rebar set 6" tall at the base of a 14" yellow-poplar tree in the center of an old road bed with a yellow Carsonite post set 3' west of the corner. Near corner X there is a stone with a "W" scribed into the top of the stone to the south-east and remnants of an old fence line running north, south and east. Corner W* has been surveyed (J. Gwinn 2003) and is identified with a 3" diameter by 30" long aluminum Bernsten pipe monument set 6" tall in a stone pile with a yellow Carsonite post set 2' west of the corner. Near corner W* is a steel post surrounded by three rocks and an old north-south fence line. The western boundary line is designated as a line from corner Y to corner X* (* located in compartment 4). Corner Y has been surveyed (J. Gwinn 2003) and is identified with a 6" x 6" stone set 3" tall with a number "3" scribed into the side and a "+" scribed into the top of the stone. Near corner Y is a 2' tall steel fence post and a yellow Carsonite post set 3'to the south of the corner. Corner X* has been surveyed (J. Gwinn 2003) and is identified with a 6" x 8" stone set 3" tall in a rock pile with a "+" scribed into the top of the stone. Near corner X* is a 1" "pinched top" pipe set 2' tall 1.3' east of the corner stone with a yellow Carsonite post set 2' west of the stone. 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 3 tract 5 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 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 Practice (B.M.P.) Guidelines 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 all diameter class, except the large (≥ 19") diameter at breast height (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, which often become wind thrown.

Cavity trees are well represented in all diameter classes at the maintenance level, except the small (≥ 7") D.B.H. class. Cavity trees are also lacking at the small (≥ 7") D.B.H and medium (≥ 11") D.B.H classes at the optimal level. 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. In addition, smaller diameter trees due to their young age are often less likely to have cavities.

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		1670	905	
20"+ DBH	255		507	252	
Snags (all species)					
5"+ DBH	340	595	1319	979	724
9"+ DBH	255	510	591	336	81
19"+ DBH	42.5	85	38	-5	-47
Cavity Trees (all species)					
7"+ DBH	340	510	273	-67	-237
11"+ DBH	255	340	273	18	-67
19"+ DBH	42.5	85	169	126	84

*** 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 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 vegetative 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 an 85-acre sustainably managed, multiple use parcel located in the northwest corner of the 301 acres contained in compartment 3 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 end of Maze road. It is a good tract for public recreational activities including hunting, hiking, gathering, viewing and interpretation. Because of its close proximity to the road and parking, it is an ideal spot for anyone looking for an easily accessible 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).

In 1991 a timber inventory was conducted in compartment 3 tract 5 (J. Allen). The data estimated the tract to contain 6,345 bd. ft. of total sawtimber per acre, including 2,618 bd. ft. of harvest sawtimber per acre with 102 sq. ft of total basal area per acre.

The tract was harvested in 1994 (Foley Hardwoods, Inc.) with 167,713 bd. ft. of sawtimber removed in 632 trees on 54 of 85 acres.

In 1988 a property wide timber inventory (TIMPIS) was conducted, including compartment 3 tract 5 (M. Calvert and D. Smith). The results estimated the tract to contain 6,777 bd. ft. of total sawtimber per acre including 1,676 bd. ft. of harvest sawtimber per acre with a total basal area (trees $\geq$ 6" d.b.h.) of 109 sq. ft. per acre and 153 trees $\geq$ 6" d.b.h. per acre.

In 2010 another timber inventory was conducted (J. Dye). The data estimated the tract to contain 13,450 bd. ft. of total sawtimber per acre, including 4,668 bd. ft. of harvest sawtimber per acre with 142 sq. ft of total basal area per acre and a stocking level of 120 %.

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 eastern white pine in small isolated 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 sassafras, sugar maple, red maple, white pine, American beech, Scots pine, oak and hickory. Advanced regeneration is represented mostly by sugar maple, red oak, white ash, dogwood and American beech. It was very encouraging to see oak regeneration represented in the advanced stages as well as the early seedling stage.

The current stocking level of 120% indicates the tract is well over stocked. Therefore, a timber harvest is recommended within the next two years. 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. 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 (oak) 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 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 – C3T5

Total Number Trees/Acre: 228 **Average Tree Diameter:** 11”
Average Site Index: 80 **Stocking Level:** 120%

	Acres		Sq.Ft./Acre
Hardwood Commercial Forest:	70	**Basal Area Sawtimber.**	103.6
Pine Commercial Forest:	15	**Basal Area Poles:**	28.2
Noncommercial Forest:	0	**Basal Area Culls:**	7.1
Permanent Openings:	0	**Sub Merch.**	3.9
Other Use:			
Total:	85	**Total Basal Area:**	142.8

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

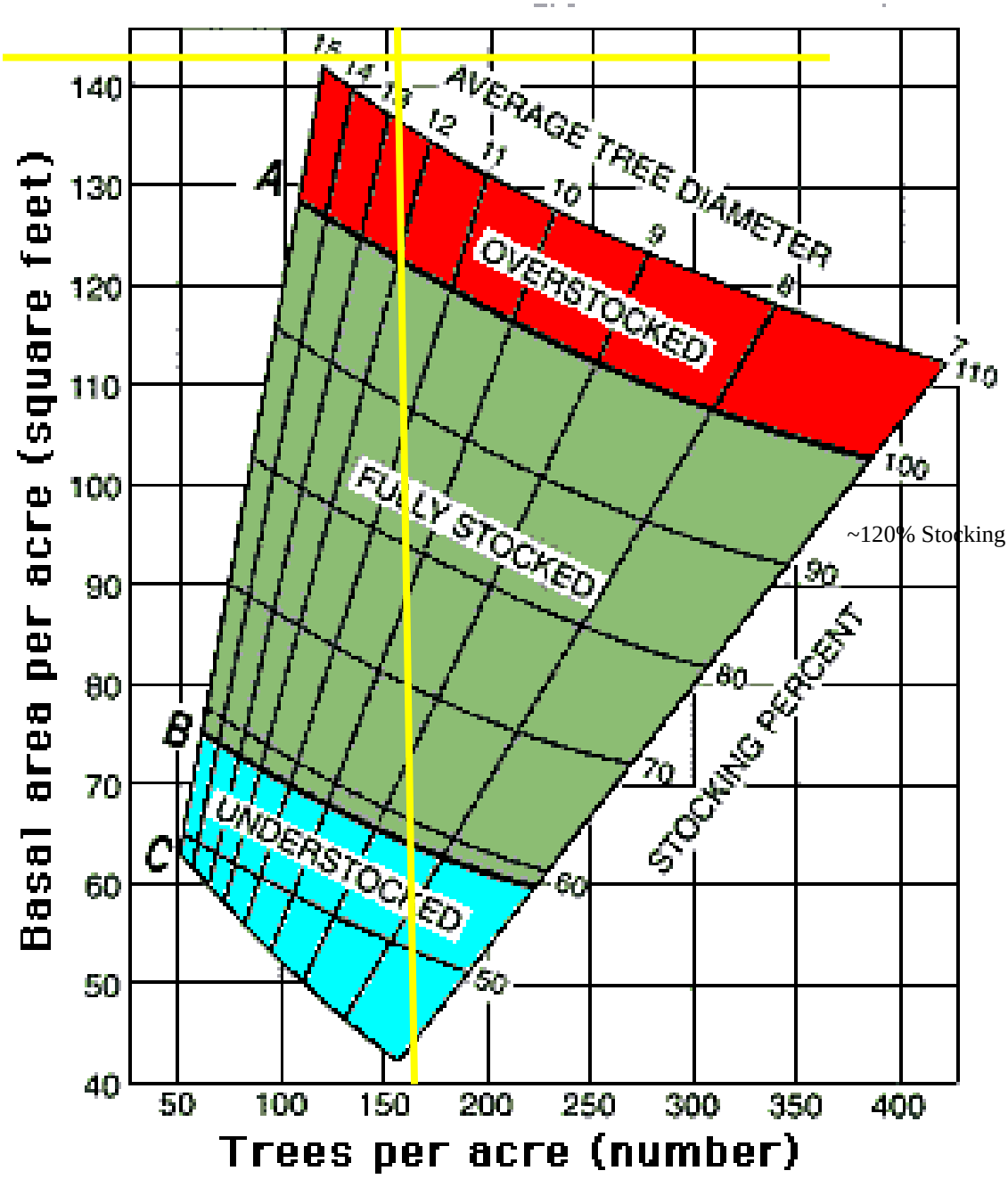
* Approximation due to accumulative rounding

Species	Harvest Stock	Growing Stock	*Total Volume
YEP	653	3938	4591
WHP	1182	495	1677
WHO	349	1249	1598
REO	429	1162	1591
PIH	325	515	840
BLO	434	219	653
LAA	364	87	450
AMB	280	80	359
SWG	100	118	218
WHA	215	0	215
SCP	80	111	191
BLC	70	62	132
BIH	0	151	151
MOH	0	151	151
SYC	0	122	122
REM	93	26	119
SHH	0	118	118
BAS	0	82	82
SAS	17	0	17
*** Per Acre Total**	4,668	8,782	13,450
***Tract Total**	396,790	746,450	1,143,240

Owen-Putnam State Forest

2010 Timber Inventory - Stocking Level
Compartment 3 Tract 5
85 - Acres

~11 Inch Average Tree Diameter



Ft. Total
Acre

~120% Stocking

228 Total Trees/Acre

Proposed Management Activities

2010 ----------	Timber Inventory
2011 ----------	Resource Management Guide
2011 ----------	DHPA Archaeological Clearance Application
2012 ----------	Timber Marking and Sale Layout
2012/13 -------	Timber Sale/Harvest
2014 ----------	Post-Harvest TSI and Exotic/Invasive Control
2014 ----------	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, September 2011)
3. Topographic Map (R. Duncan, September 2011)
4. Soil Type Map (R. Duncan, September 2011)
5. Natural Heritage Database Review (R. Duncan, 09/19/2011)
6. Aerial Photograph (2005)
7. Upland Central Hardwoods Timber Stocking Guide (R. Duncan, September 2011)
8. Archaeological Clearance Application (R. Duncan, September 2011)
9. Archaeological Clearance Letter (A. J. Ariens)

References

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2. Homoya, M. A., D. B. Abrell, J. R. Aldrich, and T. W. Post. 1985. The natural regions of Indiana. Proceedings of the Indiana Academy of Science, 94:245-268

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.

6. Indiana Natural Heritage Database. 2010. Indiana Department of Natural Resources, Division of Nature Preserves. Indianapolis, IN

7. Management Guidelines for Compartment-Level Wildlife Habitat Features. 2008. Indiana Department of Natural Resources, Division of Forestry. Indianapolis, IN.

8. Matney, T.G. 1998. TCruise. timber cruise program version 5.20. Heuristic Solutions.

9. Resource Management Strategy for the Indiana Bat on State Forest Property. 2008. Indiana Department of Natural Resources, Division of Forestry. Indianapolis, IN.

10. Smith, D. M. 1986. The practice of silviculture. New York: John Wiley & Sons Inc.

11. United States Department of Agriculture. Natural Resource Conservation Service. Soil Survey Owen County, Indiana - Series 2005)

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

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

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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.

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