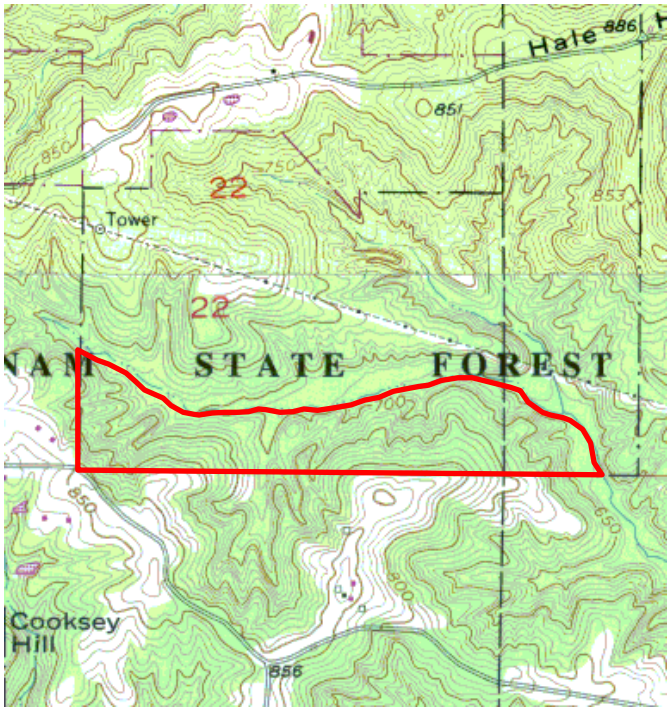
Indiana Department of Natural Resources - Division of Forestry

Resource Management Guide - Draft

State Forest: Owen-Putnam
Forester: Rob Duncan, James Dye
Management Cycle End Year: 2030
Compartment: 07 **Tract:** 05
Date: October 2010
Management Cycle Length: 20 Years

Location

Compartment 7, tract 5 spans across the dividing line between Morgan and Montgomery Townships. The western two-thirds lie in section 22, township 11N, range 4W, Morgan Township, of Owen County, Indiana. The eastern one-third lies in section 23, township 11N, range 4W, Montgomery Township, of Owen County, Indiana. The tract is approximately 7 miles northwest of the town of Spencer.



General Description

This tract is an 84-acre managed, multiple use parcel located in the south central region of the 551 acres contained in compartment 7. The timber type is predominantly closed canopy mixed hardwoods. This area exhibits good opportunities for multiple use management, including timber management, wildlife management, and soil and water conservation. It is also ideal for public recreational activities such as hiking, gathering, hunting, viewing and interpretation. Because it is somewhat landlocked by both private properties and is separated from adjacent state forest property by a mapped intermittent stream, access is somewhat difficult. Still, it is an ideal spot for anyone looking for a quieter outdoor setting for recreation. An area of exposed bedrock in and around the intermittent stream along the northern boundary is particularly scenic.

History

Owen-Putnam State Forest was established in 1948 with most of its landholdings purchased as smaller non-contiguous tracts in the 50's and 60's. Compartment 7, tract 5 has had little management in recent years, primarily because of difficult access. The westernmost portion was part of an 80 acre purchase in June 1951. The central portion was part of a 79 acre area acquired in October/November 1948. The easternmost area was part of a large parcel of land spanning what is now in both Morgan and Montgomery Townships and was acquired in May 1954.

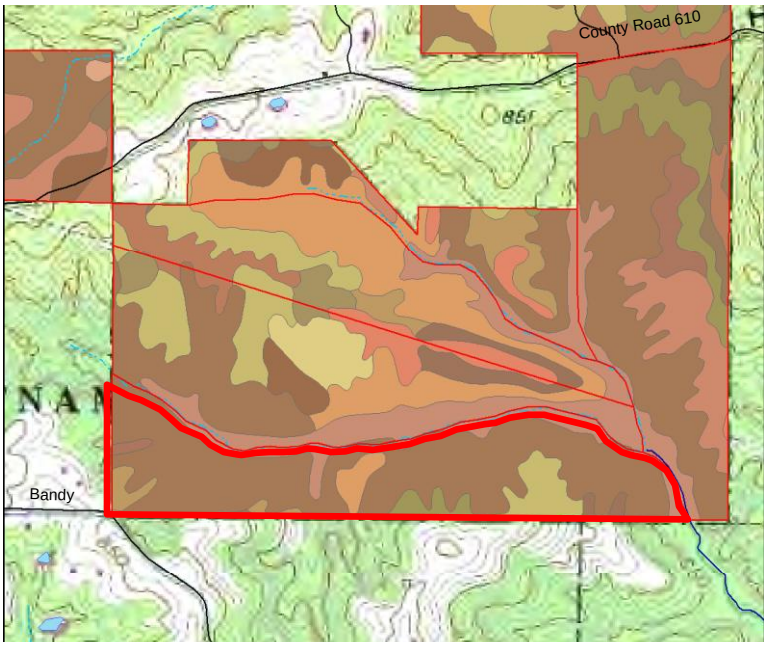
- Based on a compartment summary prepared in 1983, a tract inventory was likely conducted in the late 70's or early 80's
- New tract boundaries were drawn in 1981, but there was only a slight change
- A tract inventory was conducted in August 1988
- A property wide TIMPIS inventory was conducted in 1989
- A tract inventory was conducted in 2005
- TSI in the form of pre-harvest vine control was performed in 2007-08
- A tract inventory was conducted in 2010

Landscape Context

Adjacent to the southwestern corner of this tract is Bandy road but this is not sufficient enough for practical access. The remaining areas which border the south edge of the tract consist mostly of old field but also some closed canopy deciduous forest, and two home sites. Adjacent to the north and east edges is a mapped stream (along the north, it is an intermittent, but along the east it becomes a perennial). Across the stream on the east edge is tract 4 and across the stream to the north lays tract 3. The land to the west is privately owned and is primarily closed canopy deciduous forest.

Topography, Geology and Hydrology

This tract is generally comprised of north facing slopes although there are some undulations and small ridges as well. The northernmost portions of the tract slope down into a floodplain that encompasses a mapped intermittent which flows into the perennial that is adjacent to the east edge. This perennial flows southeast and eventually reaches the east fork of Fish creek. The intermittent stream contains some interesting exposed bedrock in and along the stream channel towards its east end. There is also a very steep ravine which somewhat bisects the stand into western and eastern halves.



This tract contains a variety of soil types; however, the Hickory-Adyeville complex is by far the dominant type with quite steep slopes and severe erosion and equipment concerns. Zanesville soft bedrock substratum makes up a large portion of the southeastern area and Plankeshaw silt loam is found near the north and east edges as part of a small floodplain. These soils are well suited to timber production. The 1959 soil series map shows a non-bedrock escarpment along the northeast edge of the tract near the intermittent stream. An escarpment is a steep slope or long

cliff that results from erosion or faulting and separates two relatively level areas of differing elevations. However, modern soil maps and field observations have not identified this feature. Best Management Practice (BMP) guidelines will be followed to preserve soil and water quality (Forest Practices Working Group, Indiana Woodland Steward Institute).

Soils

Specifically, the tract is composed of the following soils from most to least abundant:

- HepG – Hickory-Adyeville complex, 35 to 60 percent slopes
  - Site Indexes: Vary considerably, Hickory: 85 (Northern red oak, white oak), 95 (yellow poplar); Adyeville: 64 (Northern red oak)
  - Severe erosion hazard and severe equipment limitations

- ZapD3 – Zanesville soft bedrock substratum – Tulip silt loams, 12 to 18 percent slopes, severely eroded
  - Site Indexes: 69 (white oak), 90 (yellow poplar), 75 (black oak)
  - Moderate erosion hazard and equipment limitations

- PlcAV – Plankeshaw silt loam, 0 to 2 percent slopes
  - Site Indexes: 95 (yellow poplar)
  - Slight erosion hazard and moderate equipment limitation

- TtcE – Tulip-Welston-Adyeville silt loams, 18 to 25 percent slopes
  - Site Indexes: Vary considerably, Tulip and Welston soils: 80-81(Northern red oak), 90+ (yellow poplar); Adyeville: 64 (Northern red oak)
  - Moderate erosion hazard and moderate equipment limitations

- HeuF – Hickory-Wellston silt loams, 25 to 35 percent slopes
  - Site Indexes: Vary slightly, Hickory: 85 (Northern red oak), 95 (yellow poplar), 85 (white oak); Wellston: 81 (Northern red oak), 90 (yellow poplar), 70 (Virginia pine)
  - Severe erosion hazard and moderate equipment limitations

- SneC3 – Solsberry silt loam, 6 to 12 percent slopes, severely eroded
  - Site Indexes: 80 (Northern red oak)
  - Slight erosion hazard and slight equipment limitations

- SneC2 – Solsberry silt loam, 6 to 12 percent slopes, eroded
  - Site Indexes: 80 (Northern red oak)
  - Slight erosion hazard and slight equipment limitations

- SneD2 – Solsberry silt loam, 12 to 18 percent slopes, eroded
  - Site Indexes: 80 (Northern red oak)
  - Moderate erosion hazard and slight equipment limitation

- CkkB2 – Cincinnati silt loam, 2 to 6 percent slopes, eroded
    - Site Indexes: 80 (Northern red oak)
    - Moderate erosion hazard and moderate equipment limitations

Access

To access the tract, take S.R. 46 approximately 3.5-miles west of the town of Spencer to Fish creek road, then travel north on Fish creek road approximately 4.75 miles to Hale Hill road, then travel east on Hale Hill road approximately 0.25 miles to a small parking lot along the south side of the road. A long fire trail extends south from the parking lot. While some additional walking is involved, this tract is relatively easy to access for public use. Management and logging access is somewhat limited because half of the tract is adjacent to private property and the other half necessitates stream crossings.

Boundary

The south and west boundaries follow state forest boundaries adjacent to private land. The east and north boundaries are adjacent to other tracts in compartment 7.

Boundary identification is fairly typical of compartments at Owen-Putnam State Forest with most corners and lines being well documented and recently painted and flagged. Corners "I" and "J" form the south boundary line for this tract. Corner "I" is documented as a stone and fence corner. However, "J" is the only one of four corners that has not been documented. Because of the lack of corner documentation and the topography near corner "J", harvest activities will exclude this area.

Wildlife

Wildlife resources in compartment 7 tract 5 seem abundant. Common species and sign observed include Eastern grey squirrel, Eastern fox squirrel, Eastern chipmunks, white-tailed deer, Wild Turkey, Virginia opossum, North American raccoon, raptors, woodpeckers, songbirds, toads, frogs, and various small stream aquatic life.

This tract contains habitat for a variety of wildlife species. Habitat includes mostly oak-hickory and mixed hardwoods, but there are some areas, particularly along the far northern and far eastern edges with lowland hardwoods. The oaks, hickories, walnut, and beech provide hard mast for deer, turkey and squirrel. Snags (standing dead trees) and cavity trees provide nesting, bugging, and roosting opportunities for woodpeckers, songbirds, and small mammals. Rotten logs, crater knolls, and the mapped intermittent stream provide habitat for herptiles and aquatic vertebrates. The small amount of Eastern white pine may provide limited wildlife habitat.

A review of the Natural Heritage Database was conducted on December 16, 2010 to locate and identify any known endangered, threatened or rare (E.T.R.) animal species. The review did identify one E.T.R species near the project area, a Sharpshinned Hawk, which was recorded in 1985 (Carl Hauser, Division of Forestry – Property Program Specialist). This recorded Sharpshinned Hawk was approximately one mile away in an adjacent tract.

Sharpshinned Hawks do not have federal status and are widespread and abundant globally (G5). However, these hawks are breeding but imperiled in Indiana (S2B) and have a "special state concern" (SSC) status.

Sharpshinned Hawks preferred habitat is large, remote, young forests. Often, their nests are found in mixed forests, particularly conifers when available though they also like oaks. They typically eat small birds and occasionally mice, shrews, bats, frogs and insects. The Sharp-shinned Hawk is the smallest North American accipiter. "Its short wings and body design allow it to capture other birds while flying through thick woodlands. This hawk gets its name from its flattened, thin "shins" or shanks." (Department of Environmental Protection, CT)

The decline of the Sharpshinned Hawk in the 1960's and 1970's is thought to have been mostly due to the use of DDT and other pesticides which adversely affected reproduction. In more recent years, populations of the bird have largely rebounded and, as a whole, may actually exceed historical figures.

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. Despite the recorded sightings from the Natural Heritage Database being over twenty years old, there is still habitat and opportunity for this bird in and around the tract.

Indiana Logging and Forestry Best Management Practice (BMP) Guidelines will be followed to conserve soil and water resources and related forest wildlife habitat, such as riparian areas.

Wildlife Habitat Features

According to the data collected during the tract inventory and represented in the following table, this tract is very well represented with habitat in regards to the number, size and species of dead (snag) trees suitable for consideration of the Indiana bat (*Mytolis sodalis*) and its suggested habitat requirements.

Snags, standing dead or dying trees, may be one of the most important wildlife habitat features in Indiana's forests as they are used by a wide range of species as essential habitat features for foraging activity, nest/den sites, decomposers (e.g., fungi and invertebrates), bird perching and bat roosting. Additionally, snags are an important contributor to the future pool of downed woody material. In terms of snags, all size classes easily meet and exceed maintenance levels with only the $\geq$ 19" diameter category falling just short of optimum levels.

Forest wildlife species depend on live trees for shelter, escape cover, roosting and as a direct (e.g., mast, foliage) or indirect (e.g., foraging substrate) food resource. The retention of live trees with certain characteristics (legacy trees and cavity trees) is of particular concern to habitat specialists such as cavity nesters or Species of Greatest Conservation Need like the Indiana bat.

Legacy trees of a particular species having certain characteristics suitable as live roost trees for the Indiana bat are very well represented in all size categories. Cavity trees easily meet and exceed both maintenance and optimum levels in all size classes.

Legacy trees, standing dead 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 (TSI) to increase snag trees to the optimal level.

Wildlife Habitat Feature Tract Summary

	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
Legacy Trees *					
11"+ DBH	756		2953	2197	
20"+ DBH	252		872	620	
Snags (all species)					
5"+ DBH	336	588	571	235	-17
9"+ DBH	252	504	571	319	67
19"+ DBH	42	84	215	173	131
Cavity Trees (all species)					
7"+ DBH	336	504	857	521	353
11"+ DBH	252	336	510	258	174
19"+ DBH	42	84	373	331	289

*** 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 a few wetter sites located along the lower slopes, drainages, and the mapped intermittent stream, all primarily along the north and east edges.

A review of the Natural Heritage Database was conducted on December 16, 2010 to locate and identify any known endangered, threatened or rare plant species or communities. The review did identify several E.T.R. species or communities near the project area (Carl Hauser, Division of Forestry – Property Program Specialist). Shrub swamp wetland was identified in 1987 approximately 1.25 miles to the east-northeast of the tract. Species of particular note in and around this swamp community are Sharp-scaled Manna-grass (*Glyceria acutiflora*) and Cypress-knee Sedge (*Carex decomposita*) which were identified in 2008 and 1985 respectively.

"Shrub swamp communities occur in lowlands, along the margins of rivers, streams and other water bodies and along or within the boundaries of forested or herbaceous dominated wetlands. Shrub wetlands may be periodically flooded but soils are saturated year-round. The soils are generally mineral with high organic content, though some shrub swamps may exist on organic soils. Shrub swamps exist within a hydrologic gradient between forested and herbaceous dominated wetlands". (Natural Heritage and Endangered Species Program, MA Division of Fisheries and Wildlife) Swamp shrub wetland has been given "state significant" status and is imperiled in the state of Indiana.

Sharp-scaled Manna-grass grows to a height of about one meter and prefers shallow water or very wet soil, also preferring open, non-forested wetlands but not coastal nor river shore. (Maine Department of Conservation, Natural Areas Program - Sharp-scaled Manna-grass) Sharp-scaled Manna-grass is classified as state endangered (SE) and critically imperiled within the state of Indiana (S1) but is widespread and abundant globally (G5).

"Cypress-knee sedge is a perennial deciduous grass with green flowers in late spring. It requires high levels of water and a minimum of 140 frost free days to grow successfully and has no drought tolerance." (Plant Database – Cypress-knee sedge) Cypress-knee sedge is state threatened (ST) and imperiled in the state (S2) and is rare or uncommon globally (G3).

Management activities should not affect these communities and species, which are over a mile away, are not downstream from the tract, and represent non-forested wetlands.

Additionally, in 2007, a circumneutral seep was identified in compartment 6, tracts 5 and 7, approximately a quarter mile southeast of this tract. A seep is a very small (typically less than one acre) wetland area. The soil in these areas is commonly a type of muck. "Circumneutral" refers to a neutral or slightly acidic pH of the water in the soil. (New Hampshire Division of Forests and Lands, Natural Communities of NH - Photo Guide) Circumneutral seeps are considered "state significant" and are critically imperiled in Indiana. This area lies across Bandy road and Fish creek road and will not be impacted by any management activities for compartment 7, tract 5.

No exotic species were found to be present in or around the tract area.

Recreation

The area is accessible to the public via a fire lane that extends south from the east parking lot off Hale Hill road. From the southern end of the fire lane, the tract is just to the southwest and across the intermittent.

This tract is an 84-acre managed, multiple use parcel located at the east end of the 551 acres contained in compartment 7. The Timber type is predominantly closed canopy oak-hickory and mixed hardwoods. This tract is suitable for many public recreational activities, such as hiking, gathering, hunting, and viewing and interpretation. It is best suited for persons interested in a quiet, remote outdoor experience that is isolated and away from busy roads.

Cultural

Cultural resources such as old building sites, homes, barns etc. and their location on state forests are protected. To the best of our knowledge this tract does not contain any cultural resources. However, if an area is discovered which contains significant cultural resources, a surrounding buffer will be created so that any management or construction projects will not interfere with or cause harm to those resources.

Tract Description and Silvicultural Prescription

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

In the late 1970's or early 1980's, a forest inventory was conducted which estimated the tract to contain 3227 bd. ft. of total sawtimber per acre with 1627 bd. ft. of harvest sawtimber per acre. This inventory was conducted before tract boundaries were redrawn and while this area was still considered part of compartment 8. Other than a summary, which these numbers are taken from, no detailed records of an actual inventory remain. It is unknown whether such records were destroyed in a fire while kept in storage at Morgan-Monroe. A comparison of tract maps, as well as other documents that detail the realignment of compartments at Owen-Putnam State Forest, shows that the actual tract boundaries have not significantly changed and that these figures are relevant to tract 5.

In 1988 all of compartment 7 was inventoried. This tract was estimated to contain 6995 bd. ft. of total sawtimber per acre.

A timber inventory was conducted in 2005 which estimated the tract to contain 8001 bd. ft. of total sawtimber per acre and 5774 bd. ft. of harvest sawtimber per acre. It was again inventoried in 2010, estimating the tract to contain 13,964 bd. ft. of total sawtimber per acre and 4660 bd. ft. of harvest sawtimber per acre with a basal area of 147 sq. ft. per acre and 125 percent stocking.

The Timber type is predominantly closed canopy oak-hickory and mixed hardwoods with some lowland hardwoods along the north and east tract boundaries. A very small patch and scattering of Eastern white pine can be found in the southeastern region of the tract. There is also an area along the south edge on the eastern half of the tract, which appears to have been grazed in the past and that contains mostly hickory. The over-story consists mostly of medium to large sawlog sized white oak, hickory, yellow poplar, and Northern red oak trees. Sawlog sized sugar maple

and American beech trees are also present but are mostly found on north and northeast facing slopes. A significant number of black cherry and black walnut trees are also present. The overall quality of merchantable timber is very good. The large sapling and pole-sized under-story consists mostly of sugar maple, American beech, hickories, yellow poplar, pawpaw, Eastern redbud, and bluebeech. Regeneration consists mostly of white ash, hickory, American beech, white oak, Northern red oak, sugar maple, and pawpaw.

The current stocking level of 125% indicates the tract is significantly overstocked. There are many ridges rich with white oak, Northern red oak, and hickories. North facing slopes frequently contain a mixture of white oak, Northern red oak, and hickories or American beech and sugar maple. Lower lying areas contain a mixture as well, including some black walnut and American sycamore. The trees are generally mature and crowded and are often of very good quality.

There is some significant observed wind damage along a steep ravine in the western half of the tract. Due to the steepness of the terrain and the length of time that appears to have passed since the damage, a salvage cut is not feasible.

The recommendation is to perform an intermediate harvest using the single tree selection method. This will result in thinning and reducing competition with and amongst the maturing quality sawtimber trees and preferred species. Many dominant trees are fully mature and ready for harvest and this will make room for already up and coming quality trees. The composition of the tract will also be improved by harvesting low quality, damaged, diseased, dying and poorly formed trees as well as harvesting less desirable species such as maple, beech, sassafras, aspen and Eastern white pine in an effort to maintain and even improve the overall tract quality and composition. It is quite possible that an actual harvest will produce significantly more board feet than the 2010 inventory suggested in order to bring the stocking level down to the B line, or 60-70 percent stocking.

Management in the form of Timber Stand Improvement (TSI) should be performed to control grapevines, release preferred 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).

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 will be given consideration for retention as habitat for the Indiana Bat. In addition, the girdling of select cull trees could be performed through post harvest TSI to address the suggested guidelines of the Strategy for the Consideration of the Indiana Bat (IDNR – Division of Forestry, Resource Management Strategy for the Indiana Bat on Indiana State Forests, April 2008).

The existing skid trails in tract 5, though faint from many years of inactivity, will be reused. These skid trails will join with the existing trails, landing and haul road in an adjacent tract to the north. An existing landing to the north will be used. Three stream crossings will be necessary to facilitate access. Due to terrain limitations and the proximity of a private dwelling and limited

boundary documentation at corner “J”, a portion of the southwest corner will be excluded from timber harvest.

The overall goal of this prescription is to reduce competition among the larger trees, provide resources for future crop trees through the removal of over-mature and declining trees, and improve timber species composition while providing forest wildlife habitat.

Inventory Summary

Total Number Trees/Acre: 261 **Average Tree Diameters:** 10.3”
Average Site Index: 80 **Stocking Level:** 125%

	Acres		Sq.Ft./Acre
Hardwood Commercial Forest:	81	**Basal Area Sawtimber.**	114.5
Pine Commercial Forest:	3	**Basal Area Poles:**	24.4
Noncommercial Forest:	0	**Basal Area Culls:**	1.2
Permanent Openings:	0	**Sub Merch.**	7.3
Other Use:			
Total:	84	**Total Basal Area:**	147.3

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

Species	Growing Stock	Harvest Stock	Total Volume
white oak	3671	685	4356
yellow poplar	1874	1056	2930
Northern red oak	1468	98	1566
pignut hickory	876	187	1063
American beech	0	1017	1017
bitternut hickory	495	0	495
black walnut	236	233	469
largetooth aspen	0	431	431
Eastern white pine	0	429	429
shagbark hickory	409	0	409
sugar maple	89	207	296
sassafras	0	165	165
black cherry	0	98	98
American sycamore	95	0	95
red elm	0	53	53
Per Acre Total	9213	4659	13,872
Tract Total	773,892	391,356	1,165,248

Proposed Activities Listing

2010 ---------- Pre-harvest TSI and exotic control
2010 ---------- Harvest marking and sale layout
2010/11 ---------- Timber sale
2013 ---------- Post-Harvest TSI and exotic control
2013 ---------- BMP Monitoring
2020 ---------- Resource management guide

Attachments (on file in the property office)

1. Topographical Map (USGS - 7.5 Minute Series, Spencer Quadrangle)
2. Soil Type Map (Soil Survey of Owen County, Indiana – NRCS in Cooperation with Purdue University Agricultural Experiment Station and IDNR – 1995, 1997)
3. Aerial Photograph (2003)
4. Upland Central Hardwoods Timber Stocking Guide (USDA-Forest Service, Northeastern Area NA-MR-7)
5. Timber Inventory Summary Reports (TCruise Brand Software)
6. Natural Heritage Database Review Map (C. E. Hauser, Property Program Specialist, IDNR-Division of Forestry 12/16/2010)
7. Archaeological Clearance Application (R. Duncan, Forest Resource Specialist, IDNR-Forestry, Owen-Putnam State Forest, November 2010)
8. Archaeological Clearance Approval Letter (A. J. Ariens, Forest Archaeologist, IDNR, Division of Forestry, 12/20/2010)
9. Natural Heritage and Endangered Species Program, MA Division of Fisheries and Wildlife
10. Maine Department of Conservation, Natural Areas Program - Sharp-scaled Manna-grass)
11. Plant Database – Cypress-knee sedge
12. Indiana County Endangered, Threatened and Rare Species List – Owen County

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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.