Indiana Department of Natural Resources
Division of Forestry

DRAFT

Resource Management Guide

State Forest: Owen-Putnam
Compartment: 10 **Tract:** 01
Forester: R. Duncan, J. Dye
Date: September 2010
Management Cycle End Year: 2030
Management Cycle Length: 20 Years

Location

Compartment 10, tract 1 lies in the southwest quarter of section 21, township 10N, range 4W, Lafayette Township, of Owen County, Indiana. It is approximately 5 miles west of the town of Spencer.

General Description

This tract is a 56-acre managed, multiple use parcel located at the south end of the 260 acres contained in compartment 10. 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, particularly hunting, but also hiking, gathering, viewing and interpretation. Because of its remote and isolated 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 50's and 60's. Compartment 10 tract 1 has been managed for several years. An upper portion of the tract is contained in a parcel that was purchased in June 1948. A lower portion, approximately two-thirds of the tract, wasn't purchased until much later, July 1964.

- A state surveyor re-established the state forest boundary line in 1984
- A property wide TIMPIS inventory was conducted in 1988
- A tract inventory was conducted in 1989
- A timber sale was conducted in 1990
- Post-harvest timber stand improvement in the form of grapevine control and creation of four regeneration openings took place in 1991
- Tree planting in the southwest corner that included 30 Eastern white pine, 40 green ash, and 35 swamp white oak (6' x 6' spacing) in 1991
- TSI in the form of vine control was conducted in 2005/06
- TSI in the form of opening maintenance was performed in 2007/08
- A tract inventory was conducted in 2008

Landscape Context

Adjacent to the north edge of this tract is tract 2 which is mostly closed canopy deciduous forest. The remaining lands surrounding tract 1 are privately owned. The area to the east is comprised almost exclusively of closed canopy deciduous forest. To the south is a mixture of some deciduous forest, some agriculture, a family dwelling, a pond, and some pasture. To the west are some fields, some deciduous forest, and the southwest corner is next to a lowland riparian area around the west fork of Fish creek.

Topography, Geology and Hydrology

This tract is generally comprised of ridge tops and moderate to steep slopes. The steepest area is a steep section of north-northwest facing slopes located just below the middle of the tract where a large drainage forms and runs to the southwest. The north facing slopes along the north boundary of the tract are somewhat steep but are fairly shallow.

The soils are comprised of a variety of types. Particular care must be taken in the Tipsaw-Rock outcrop complex soils found in the steepest sections just below the middle of the tract and along the north tract boundary which were mentioned earlier. These areas pose severe erosion hazards and equipment limitations. The Tulip-Welston-Adyeville sections which typically surround those areas are also of moderate concern. Consideration should also be given to those soils in the southwestern corner of the tract which are particularly prone to flooding. Best Management Practice (BMP) guidelines should be followed to preserve soil and water quality (Forest Practices Working Group, Indiana Woodland Steward Institute). In the event of logging, the existing trail system and log yard can be utilized, eliminating the need for new trail construction and minimizing soil disturbance.

Water sheds generally from the northeast to the southwest into the west fork of Fish creek, and along the north edge it flows down into the ravine and west, also to the west fork of Fish creek.

Soils

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

- ZamB2 – Zanesville silt loam, soft bedrock substratum, 2 to 6 percent slopes, eroded
  - Site Indexes: 69 (white oak), 90 (tulip poplar), 75 (black oak)
  - Slight erosion hazard and equipment limitations

- 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 equipment limitations

- TcgG – Tipsaw-Rock outcrop complex, 35 to 70 percent slopes
  - Site Indexes: 70 (Northern red oak, black oak, Virginia pine)
  - Severe erosion hazard and equipment limitations
- PryB – Potawatomi silt loam, 1 to 3 percent slopes
  - Site Indexes: 80 (white oak), 93 (yellow poplar)
  - Slight erosion hazard and moderate equipment limitations

- PlcAV – Plankeshaw silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration
  - Site Indexes: 95 (yellow poplar)
  - Slight erosion hazard and moderate equipment limitations

- BdxAV – Belknap silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration
  - Site Indexes: 90 (yellow poplar), 100 (Eastern cottonwood), 90 (pin oak)
  - Slight erosion hazard and moderate equipment limitations

- ZamC2 – Zanesville silt loam, soft bedrock substratum, 6 to 12 percent slopes, eroded
  - Site Indexes: 69 (white oak), 90 (yellow poplar), 75 (black oak)
  - Slight erosion hazard and 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

Access

To access the tract take S.R. 46 approximately 3.5-miles west of the town of Spencer to Patricksburg road, then travel southwest on Patricksburg road approximately 4.0 miles to Romine road, then travel north on Romine road approximately 0.8 miles to a parking lot where the road ends. A series of fire trails originates from this lot including one branch which extends south and branches into portions of the tract. Management and logging access as well as public recreational access to this tract is very good.

Boundary

The south, east, and west boundaries follow state forest boundaries adjacent to private land. The north boundary follows topographic features, a ravine.

Line D to E was repainted in 1998. It is also marked by a fence on the east end that goes west into both a field and the area where trees were planted (swamp white oak, Eastern white pine, and green ash). Corner D is marked by two steel posts and a small rod. Corner E has steel posts out in a field. Line E to F was repainted in 1998 and contains some intermittent locust fence posts. This line was also flagged in 2008. Line C to D follows an old fence with newer sections near point D and this line was also repainted in 1998. A stone and steel post is located at the midpoint.

Wildlife

Wildlife resources in compartment 10 tract 1 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, Eastern box turtle, raptors, songbirds, toads, frogs and various small stream aquatic life.

This tract contains habitat for a variety of wildlife species. Habitat includes oak-hickory in the southern portion and mixed hardwoods and beech-maple in the northern portion. The oaks, hickories and beech provide hard mast for deer, turkey and squirrel. A few snags (dead trees) and cavity trees provide nesting, bugging and roosting opportunities for woodpeckers, songbirds, and small mammals. Rotten logs, crater knolls and potential intermittent streams 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 (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 fairly well represented with habitat in regards to the number, size and species of live and dead trees suitable for consideration of the Indiana bat (Mytolis sodalis) and its suggested habitat requirements (legacy trees). Shagbark hickory is particularly strong abundant in this

tract. Also, as the tract continues to mature, the number of 20"+ legacy trees is expected to rise.

In terms of standing dead trees (snags), this tract is above maintenance level in the smaller diameter at breast height (D.B.H.) categories. There is some deficiency in ≥ 19" D.B.H. at the maintenance level, and all D.B.H. categories fall short of optimal levels.

Cavity trees are less well represented than snags, falling short in both of the smaller D.B.H. categories. However, they were found to be above maintenance and optimal levels in the ≥ 19" category. 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 7"+ and 11"+ diameter expectations.

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 TSI to address the lack of snag trees.

Wildlife Habitat Feature Tract Summary

	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
Legacy Trees *					
11"+ DBH	504		2905	2401	
20"+ DBH	168		332	164	
Snags (all species)					
5"+ DBH	224	392	351	127	-41
9"+ DBH	168	336	176	8	-160
19"+ DBH	28	56	0	-28	-56
Cavity Trees (all species)					
7"+ DBH	224	336	127	-97	-209
11"+ DBH	168	224	127	-41	-97
19"+ DBH	28	56	94	66	38

*** Species Include:** AME, BIH, BLL, COT, GRA, REO, POO, REE, SHH, ZSH, SIM, SUM, WHA, WHO

Communities

Most of this tract is of the mesic forest community type with some isolated, wetter sites located along the lower slopes and drainages.

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.

Exotic species are present in and around the tract with small scattered occurrences of multi-flora rose and denser populations along existing trails and in the general northeastern portion of the tract. Control measures should be proposed, possibly during post-harvest timber stand improvement activities, whereby herbicides could be applied to treat these occurrences before their populations expand.

Recreation

The area is accessible to the public via the parking lot on the gravel lane just beyond the end of Romine road and then following a fire trail southwest into the tract.

This tract is a 56-acre managed, multiple use parcel located at the south end of the 260 acres contained in compartment 10. The Timber type is predominantly closed canopy mixed hardwoods. 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 as it is isolated and away from busy roads.

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).

Between 1988 and 1989 a property wide inventory (TIMPIS) was conducted, including compartment 10 tract 1. The results estimated the tract to contain 6343 bd. ft. of total sawtimber per acre with 2203 bd. ft. of harvest sawtimber per acre and a total basal area of 108 sq. ft. per acre. A harvest was proposed for 1989, and a future harvest was also tentatively set for 2008.

The tract was harvested in 1990 with 87,155 bd. ft. of sawtimber removed in 436 trees and 69 culls. The tract was again inventoried in 2008. The data estimated the tract to contain approximately 7460 bd. ft. of total sawtimber per acre with an estimated 2900 bd. ft. of harvest sawtimber per acre with 109.2 sq. ft of basal area per acre, in trees $\geq$ 6 inches in diameter at breast height (D.B.H.), and a stocking level of 87 % with an average tree diameter of 12.3 inches. No trace of the 1991 tree planting in the southwest corner of the tract remains today.

The timber type is predominantly closed canopy beech-maple with some mixed upland hardwoods and areas of oak-hickory. The over-story consists mostly of medium to large sawlog sized sugar maple, hickories, Northern red oak, yellow poplar, and some white oak. The quality of merchantable timber is poor to good. Generally speaking, the southern ridge of the tract contains more mature trees than the northern (especially northeast) portions. The pole-sized under-story consists mostly of sugar maple, American beech, sassafras, and yellow poplar. However, there are some Northern red oaks, white oaks, chinkapin oaks, and hickories scattered throughout. Advanced regeneration is represented mostly by maple, beech, ash, and Sassafras. However, Northern red oak, chinkapin oak, and white oak are well represented, typically in the earlier stages of regeneration. Northern red oak regeneration is especially present (and more advanced in growth) along existing fire and skid trails in the eastern parts of the tract.

The current stocking level of 87% indicates the tract is essentially fully stocked. Some of the southern areas of the tract are reaching maturity and competition for resources is starting to take place, particularly within a dense area of shagbark hickories. In the remaining areas the tract is still maturing but 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 composition.

The recommendation is to perform an improvement cut using the single tree selection method. While this will naturally result in some amount of thinning, generally, that should not be a primary goal of this forest management activity. The composition of the tract will be improved by harvesting the low quality, damaged, diseased, dying and poorly formed trees as well as harvesting less desirable species. This will release the more desirable pole and sawlog stems. In some cases, particularly in the north half of the tract, openings may be created to remove large areas of undesirable species and promote early successional regeneration. Four openings were created as part of post-harvest management in 1991, but each of these was 1 acre or smaller in size. Based on observations made during follow-up maintenance in 2007/08, these openings were only limitedly successful. Any new openings should be significantly larger in size where appropriate. Larger openings will allow more light penetration which should favor oaks as seen along the skid trails in this tract where there is an abundance of light and advanced Northern red oak regeneration. 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 white oak is a strong component) are left standing. This will allow more diffuse light to reach the understory and improve the survival and vigor of oak regeneration. Herbicides may also be used to treat and remove undesired species from the understory. Progress should be periodically monitored so that plans to remove unwanted competition or overstory trees (either through harvest or TSI) to release up and coming stems can be made.

Management in the form of Timber Stand Improvement (TSI) should be performed to 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). Grape vines are not a significant concern in this tract. However, multi-flora rose is present and is moderately thick in some areas, particularly in the northeastern areas and near existing trails. It is also present in larger quantities in the neighboring 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 will be given consideration for retention as habitat for the Indiana Bat. In addition, the girdling of select cull trees should 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 overall goal of this prescription is to improve timber species composition and create favorable growing conditions for early successional timber species, while providing forest wildlife habitat. As with all forest management activities, Best Management Practice (BMP) guidelines will be followed to protect soil and water resources (Forest Practices Working Group, Indiana Woodland Steward Institute).

Proposed Activities Listing

2011 ----------	Harvest marking and sale layout
2011/12 -------	Timber sale
2013 ----------	Post-Harvest TSI and Exotic Control
2013 ----------	BMP Monitoring
2016 ----------	Evaluation of regeneration in key areas, additional TSI if necessary
2020 ----------	Resource management guide

Attachments (on file in the property office)

1. Topographical Map (USGS - 7.5 Minute Series, Cataract 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 (10/08/2008, C. E. Hauser)
7. Owen County ETR Species List and Rankings
8. Archaeological Clearance Application (Sep., 2007)
9. Archaeological Clearance Approval Letter (A. J. Ariens, Forest Archaeologist)
10. cop14_IUCN_Analysis_Prop_02_Lynx _rufus
11. http://www.nature.org/wherewework/northamerica/states/indiana/misc/art24800.html
12. http://www.in.gov/dnr/fishwild/3370.htm
13. http://www.nhptv.org/natureworks/americanbadger.htm

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