Resource Management Guide

State Forest: Owen-Putnam
Forester: R. Duncan
Management Cycle End Year: 2030
Compartment: 01 **Tract:** 03
Date: May 2010
Management Cycle Length: 20 Years

Location

Compartment 1, tract 3 is located near the Leiber State Recreation Area and lies mostly in the south east quarter of section 5 and the east half of section 8, township 12N, range 4W, Cloverdale Township, of Putnam County Indiana. It is approximately 4 miles due west of the town of Cloverdale. S.R. 42 being the primary means of ingress.

General Description

This tract is a 137-acre managed, multiple use parcel located at the north end of the 560 acres contained in compartment 1. The tract is made up of oak-hickory and beech-maple with scattered mixed hardwoods. In addition, there are approximately 13-acres of White Pine containing some scattered Virginia Pine. This area exhibits good opportunities for multiple use management, including timber management, wildlife management, soil and water conservation and public recreational activities, such as, hunting, fishing, hiking, gathering, viewing and interpretation.

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 1 tract 3 has been managed for several years being part of a property wide TIMPIS inventory conducted in 1988 through 1989, a tract inventory conducted in 1976, 1987 and 2009 with timber sales conducted in 1969 and 1988.

Landscape Context

Generally the area surrounding this tract is rural, predominantly closed canopy deciduous forest with some small isolated pine stands, some small early successional areas, some pasture, some hayfields and some small open water wetlands with scattered single family dwellings and very little agriculture. However, there is a large body of water in Cagles Mill Reservoir with many family homes and summer cottages nearby.

Topography, Geology and Hydrology

This tract occurs on the boundary of the Escarpment and Crawford Upland Sections of the Shawnee Hills Natural Region. The Crawford Upland section of this region is a continuous chain of rugged hills with cliffs. The Escarpment section of this region consists primarily of Pennsylvanian and Mississippian bedrock. For the region, Sandstone and Wellston-Zanesville derived soils have formed on the hills with limestone soils found at lower elevations. This region

has a well integrated drainage system with a westward sloping plateau and an abundance of stream valleys. This tract is generally comprised of two predominant north-south ridges with moderate to steep, east and west facing slopes with a mapped intermittent stream between them and level ground along the western ridge top.

Soil types are typical for the area and occur throughout the Illinoian glaciated areas of the county. In the event a harvest operation is performed, the existing haul road and log yard can be utilized. However, care must be taken during the planning and execution of skid trails due to the erosive nature of some of these soils. Indiana Logging and Forestry Best Management Practice (BMP) Guidelines will be followed to conserve soil and water resources and related forest wildlife habitat, such riparian areas.

Generally, water sheds from the west and from the east, down from the ridge tops into ephemeral drainages and then into a mapped intermittent stream, which flows from south to north into another mapped intermittent stream (Fall Creek) which flows west into Cagles Mill Reservoir.

Soils

The tract is composed primarily of the Hickory loam on 35-70% slopes, the Iva silt loam on 0-2% slopes and the Ava silt loam on 1-4% slopes. The Hickory series consists of deep, well drained, steep soils that lack a fragipan and have a high potential for erosion. While the Ava silt loam has a more moderate potential for erosion and the Iva silt loam having only a slight potential for erosion. These soils are suited to forests and timber production. However, some of these soils, when bare, are very susceptible to erosion and as such care must be taken during the planning and execution of management activities.

Specifically, the tract is composed of the following soils:

- HcG – Hickory Silt Loam, 35-70% Slopes
- Iva - Iva Silt Loam, 0-2% Slopes
- AvB - Ava Silt Loam, 1-4% Slopes
- Ch - Chagrin Silt Loam
- AvB2 – Ava Silt Loam, 3-6% Slopes, Eroded
- AwC2 - Ava Silt Loam, 6-12% Slopes, Eroded
- ZaC2 - Zanesville Silt Loam, 6-12% Slopes, Moderately Eroded
- Sh - Shoals Loam

Access

To access the tract take Robert Weist Avenue (W. C.R. 1000 S. / E. C.R. 1000 S.) approximately 4-miles west of the town of Cloverdale to S.R. 243, then travel south on S.R. 243 approximately 1.5 miles to W. C.R. 1150 S., then travel east on W. C.R. 1150 S. less than a ¼ mile to the parking lot on the north side of the road. In addition, there is a small parking lot on the north side of the road another ¼ mile east on W. C.R. 1150 S. Management and logging access, as well as, public recreational access to this tract is very good.

Boundary

The west boundary of the tract is located primarily along S.R. 243 and crosses slightly to the west of S.R. 243 as the road diverges to the east. The south boundary is located along W. C.R. 1150 S. The east boundary of the tract coincides with the east boundary line of section 5 and private property. There is some old, intermittent, north-south fence line along the eastern tract boundary adjacent to private property. The north boundary follows some topographical features and private property lines, yet is essential non-descript.

Boundary lines have been flagged, yet caution and leeway should be given when marking timber along the north and east boundary lines due to their lack of documentation.

Wildlife

Wildlife resources in compartment 1 tract 3 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, woodpeckers, songbirds, toads, frogs and various small stream aquatic life.

This tract contains habitat for a variety of wildlife species. Habitat includes the oak-hickory and beech-maple cover type with mixed hardwoods and pine. The oaks, hickories and beech provide hard mast for deer, turkey and squirrel. The pine stands provide benefits such as winter cover, roosts for grouse and turkey and emergency browse for deer. Snags (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 streams provide habitat for herptiles and aquatic vertebrates.

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

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 likely hood that specialist interior forest species would be affected by generalist species using forest edge habitats.

A review of the Natural Heritage Database was conducted on July 11, 2007 to locate and identify any known endangered, threatened or rare (E.T.R.) animal species. The review did not identify any E.T.R. animal species within the project area. However, a Timber Rattlesnake (Crotalus horridus) was observed in compartment 1 tract 1, 1.5 miles to the south in 1963.

In Indiana, Timber Rattlesnakes are most commonly found in mature forests in rugged, hilly, sometimes rocky terrain or along bluffs and forests surrounding river corridors or riparian areas. These areas are primarily confined to the hilly regions in the south with scattered populations across unglaciated areas of south central Indiana, where exposed rock and suitable den structures are more abundant. Although, Timber Rattlesnakes prefer mature forests, shedding snakes often use small openings and trail edges to bask. In addition, pregnant females tend to use open,

sparsely forested, sometimes rocky areas or often hollow logs in open areas for basking during gestation. Feeding snakes will often prop their heads on the side of fallen logs that have been used as mammal runways and wait for mice, voles, chipmunks and other small mammals to pass by.

With this sighting being nearly 50 years old and no recent sightings, and with the area being glaciated, disturbed and fragmented in general, and with the amount of local development over the years; the likely hood of this area supporting Timber Rattlesnakes is relatively poor. However, consideration could be given to support their management and habitat requirements. With the presumption that this area has the potential to support Timber Rattlesnakes, management activities such as fragmentation via large scale clear cutting or trail construction should be avoided in order to maintain a more contiguous forest canopy. Selective cutting in these areas as described in the following silvicultural prescription would be preferable. Debris such as fallen logs should be left in place, especially along the edge of log landings and comparatively smaller regeneration openings that may be created. This should enhance basking and gestation opportunities for the Timber Rattlesnakes, as well as, foraging and shelter opportunities for the Timber Rattlesnakes and other animals. Also, trail maintenance, specifically brush hogging to clear trail sides should be done in the fall or winter to reduce snake mortality.

Wildlife Habitat Features

According to the data collected during the tract inventory and represented in the following table, this tract is well represented with habitat appropriate 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.

However, according to the data collected there is a lack of cavity trees in this tract. This data was collected during leaf on, which impedes vision and could explain or exaggerate the lack of cavity trees in all diameter expectations.

In addition, there is a lack of snag trees $\geq$ 9” and $\geq$ 19” in diameter at breast height (D.B.H.) above the optimal level.

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 $\geq$ 9 inches in diameter 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	1233		3597	2364	
20"+ DBH	411		682	271	
Snags (all species)					
5"+ DBH	548	959	1567	1019	608
9"+ DBH	411	822	565	154	-257
19"+ DBH	68.5	137	98	30	-39
Cavity Trees (all species)					
7"+ DBH	548	822	742	194	-80
11"+ DBH	411	548	416	5	-132
19"+ DBH	68.5	137	27	-41	-110

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

Communities

The dominant natural community is upland forest with vegetation consisting mostly of the mixed hardwood, oak-hickory and beech-maple complex with a more mesic component in the ravines. Typical upper slope species include red oak, white oak and shagbark hickory, with lower slope species consisting of American Beech, Yellow-Poplar, Sugar Maple, Black Walnut and White Ash.

A review of the Natural Heritage Database was conducted on July 11, 2007 to locate and identify any known, endangered, threatened or rare (E.T.R.) plant species or communities. The review did not identify any E.T.R. plant species or communities within or near the project area.

Exotic species are present in and around this tract with large patches of Multi-Flora Rose occurring around the previously disturbed sites. Control measures should be proposed and possibly implemented during post-harvest timber stand improvement activities, whereby herbicide and mechanical methods could be applied to treat these occurrences before their populations expand.

Recreation

The tract with its parking lots and close proximity to S.R. 42 and S.R. 243 is easily accessible to the driving public. It is also near the entrance to the Leiber State Recreation Area and is therefore accessible to pedestrian visitors. In addition, a section of Fall Creek passes through this tract creating further recreational opportunities.

This area exhibits good opportunities for multiple use management, including timber management, wildlife management, soil and water conservation and public recreational activities, such as, hunting, hiking, fishing, gathering, viewing and interpretation.

Compartment 1 tract 3 has the potential to be a regularly visited area by the public.

Cultural

Cultural resources such as old foundations, homes, barns, building sites, wells etc. and their location on state forests are protected. Any cultural resources located within this tract have had a buffer zone established around them and forest management will preserve these sites during the planning and execution of management activities. Also, there is some old, intermittent, north-south fence line along the eastern tract boundary adjacent to private property.

Tract Description and Silvicultural Prescription

This tract was not divided into subdivisions.

In 1969 a harvest was conducted with 181,140 Bd. Ft. of sawtimber removed in 654 trees. An additional 5,848 Bd. Ft. of sawtimber was removed in 34 prime trees.

In 1976 this tract was inventoried with the results estimating the tract to contain 3,572 Bd. Ft. of total sawtimber per acre with 657 Bd. Ft. of harvest sawtimber per acre, 94 Sq. Ft. of total basal area per acre and a harvest proposed in the year 1985.

The tract was again inventoried in 1987 with the results estimating the tract to contain 5,625 Bd. Ft. of total sawtimber per acre with 2,178 Bd. Ft. of harvest sawtimber per acre, 106 Sq. Ft. of total basal area per acre and a harvest planned in the year 1988.

The tract was harvested in 1988 with 70,302 Bd. Ft. of sawtimber removed in 391 trees on 67 acres.

In 2009 the tract was inventoried with the results estimating the tract to contain approximately 5,320 Bd. Ft. of total sawtimber per acre with an estimated 1,140 Bd. Ft. of harvest sawtimber per acre, 115 Sq. Ft of total basal area per acre, a stocking level of 99 % with an average tree diameter of 11 inches and a harvest proposed in the year 2010.

The timber type in compartment 1 tract 3 is primarily closed canopy upland hardwoods with beech-maple along the drainages, oak-hickory along the upper slopes and mixed hardwoods

scattered throughout, with yellow-poplar being the dominant sawtimber species. In addition, there are approximately 13-acres of White Pine with some scattered Virginia Pine.

The over-story consists mostly of medium to large sawtimber sized Yellow Poplar, Northern Red Oak, Sugar Maple, White Oak, Bitternut Hickory and American Beech with American Sycamore and Basswood well represented along the drainages. The quality of merchantable timber is fair in the relatively less desirable species, such as maple and beech, yet improves reasonably well in the more desirable species such oak, hickory and poplar. The White Pines are of good quality with the Virginia Pine being slow to mature and of poorer quality.

The small sawtimber and pole-sized co-dominant and overtopped trees consist mostly of Sugar Maple, Yellow-Poplar, Eastern White Pine, American beech, Virginia Pine, Bitternut Hickory and Sassafras with White Ash, White Oak and Red Oak somewhat represented. Sub-merchantable saplings are represented mostly by Sugar Maple, American Beech, Yellow-Poplar, Basswood and Bitternut Hickory with White Oak being the only oak species represented in this category. However, field observations noted that Red and White Oak are reasonably well represented in the seedling stages of regeneration.

The current stocking level of 99% indicates the tract is fully stocked with the dominant sawtimber sized poplar, oak, maple and hickory overly competing for resources. With the crowded dominant sawtimber species, an adequate oak-hickory residual stocking and the presence of less desirable shade tolerant species, this tract would benefit from an intermediate harvest in the form of a thinning and improvement cut.

The recommendation is to perform a timber harvest using the selective cutting and improvement cutting methods, whereby thinning and reducing competition amongst the dominant trees through the single tree selection method, in addition to improving the timber species composition of the tract by harvesting the low quality, damaged, diseased, dying and poorly formed trees, as well as, harvesting the less desirable or shade tolerant species through the single tree and group selection methods. In addition, the White Pines should be thinned to release the higher quality individuals and the Virginia Pines should, for the most part, be removed in order to release the White Pine or to allow for the conversion to hardwoods.

In addition, management in the form of timber stand improvement (TSI) should be performed to control excessive grapevine populations, release preferred crop trees through the culling of low volume, poorly formed trees and less desirable species and to encourage shade intolerant, early successional (Oak) regeneration through the creation of canopy gaps, completion of group selection openings and a reduction in understory shade tolerant species (maple, beech, pine). Standing dead trees (snags) and cavity trees will be given consideration for retention as habitat for the Indiana Bat and other 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 $\geq$ 9 inches in diameter could be performed through post harvest TSI to address the guidelines of the Strategy for the Consideration of the Indiana Bat.

The overall goal of this prescription is to thin the tract and reduce competition amongst the larger trees, improve timber quality and species composition, and to create favorable growing

conditions for early successional timber species, while providing a broad range of forest wildlife habitat. Indiana Logging and Forestry Best Management Practice (BMP) Guidelines will be followed to conserve soil and water resources and related forest wildlife habitat, such riparian areas.

Inventory Summary

Number Trees/Acre: 201
Average Site Index: 80
Average Tree Diameter: 11”
Stocking Level: 99%

	Acres		Sq.Ft./Acre
Hardwood Commercial Forest:	124	**Basal Area Sawtimber.**	83.0
Pine Commercial Forest:	13	**Basal Area Poles:**	22.4
Noncommercial Forest:	0	**Basal Area Culls:**	06.1
Permanent Openings:	0	**Basal Area Sub-Merch.**	03.4
Other Use:	0		
Total:	137	**Total Basal Area:**	114.9

2009 Estimated Tract Volumes for Commercial Forest Area – Bd.Ft., Doyle Rule

Species	Growing Stock	Harvest Stock	Total Volume
Yellow Poplar	1300	430	1730
Sugar Maple	270	220	490
Red Oak	680	70	750
White Oak	620	70	700
E. White Pine	310	0	310
Bitternut Hickory	270	70	340
American Beech	190	80	270
Sassafras	40	10	50
Black Oak	270	20	290
A. Sycamore	40	10	50
Shagbark Hickory	60	0	60
White Ash	0	100	100
Largetooth Aspen	30	0	30
Red Maple	20	20	40
Basswood	30	0	30
Black Cherry	20	10	30
Pignut Hickory	20	20	40
Black Walnut	20	0	20
Virginia Pine	0	0	0
Red Elm	0	0	0
Persimmon	0	0	0
American Elm	0	0	0
Black Locust	0	0	0
Per Acre Total	4190	1130	5330
Tract Total	574,030	154,810	730,210

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

You **must** indicate 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.

Proposed Activities Listing

Proposed Management Activity	Proposed Date (FY)
Tract Inventory	08/09
Tract Management Plan	09/10
Pre-Harvest TSI	09/10
Timber Marking and Sale Layout	09/10
Timber Sale	10/11
BMP Monitoring	11/12
Post-Harvest TSI and Exotic Control	11/12
Tract Inventory	29/30

Attachments (on file in the property office)

1. Timber Inventory Summary Reports (Tcruise, 07/07/09)
2. Topographical Map (USGS - 7.5 Minute Series, Reelsville, Cloverdale, Cataract and Poland Quadrangle)
3. Natural Heritage Database Review Map (C. E. Hauser, 07/11/07)
4. Aerial Photograph (2003)
5. Upland Central Hardwoods Timber Stocking Guide (USDA-Forest Service, Northeastern Area NA-MR-7)
6. Archaeological Clearance Application (R. Duncan, 07/00/07)
7. Archaeological Clearance Letter (A. J. Ariens, 08/03/07)

References

Center for Reptile and Amphibian Conservation and Management. 2003. Timber rattlesnake, Crotalus horridus, Identification, Status, Ecology and Conservation in the Midwest. Indiana University-Purdue University, Fort Wayne, IN.

Division of Forestry, Indiana Department of Natural Resources. 2008. Indiana State Forests: Environmental Assessment.

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

Indiana Woodland Steward Institute, Forest Practices Working Group. 1999. Indiana Logging and Forestry Best Management Practices, BMP Field Guide. Division of Forestry, Indiana Department of Natural Resources.