Indiana Department of Natural Resources - Division of Forestry

RESOURCE MANAGEMENT GUIDE

(DRAFT)

State Forest: Yellowwood **Compartment:** 14 **Tract:** 25
Foresters: Josh Kush/Amy Spalding **Date**: December 30, 2010 *Revised 2/22/11*
Management Cycle End Year: 2030 **Management Cycle Length:** 20 years

Location

This tract is located in Section 12 of T10N, R1E of Brown County, Indiana. This area is commonly referred to as Compartment 14 Tract 25 of the Yellowwood State Forest. It is located approximately 1 mile south of Mahalasville, IN and 6 miles southeast of Martinsville, IN.

General Description

This tract is located in the southern portion of the Brunner Tract Forest & Wildlife Management Unit. This tract was part of a large acquisition acquired by the State in 1988. Forest management practices within this portion of the State Forest are directed toward creating and maintaining an array of early successional wildlife habitats such as old fields, warm season grasslands and early successional timber stands. The tract is 88 acres of which 83.5 acres are in commercial forest. About 4.5 acres are currently in a permanent wildlife (old field) opening that has been periodically maintained by prescribed burning. This tract is primarily hardwood forest. The following structure was noted during the 2010 inventory, listed according to relative frequency.

Regeneration	Understory	Overstory
Sugar Maple	Chestnut Oak	Chestnut Oak
Sassafras	Sugar Maple	Scarlet Oak
American Beech	Sassafras	Black Oak
Pignut Hickory	Northern Red Oak	Sassafras
Red Maple	Yellow Poplar	Northern Red Oak
Redbud	Red Maple	Yellow Poplar
Blackgum	Pignut Hickory	White Oak
Red Elm	Red Elm	Sugar Maple
Chestnut Oak	Basswood	Red Elm
	Bitternut Hickory	Basswood
	White Oak	American Beech
		Largetooth Aspen
		Red Maple
		Pignut Hickory
		Bitternut Hickory
		White Ash

History
This area is part of a larger purchase in 1988 from George Brunner. Several timber harvests had occurred by the Brunner family on the large purchase area prior to State acquisition. This tract was last harvested by Brunner in 1983. Three grassland/crop field areas (Fields 3, 5 & F) were maintained by the Brunner family along the main access which is the tract's south boundary. The wildlife waterhole in the south field (Field #5) has an unknown history but may have been created by Forest Wildlife shortly after State acquisition. The first field review of the tract was completed by YSF Forester Unversaw shortly after acquisition. He noted that that the south and west facing slopes had not been harvested or TSI'd. It was recommended that these areas be treated with a commercial firewood harvest in 1988-89. In 1992 the south wildlife field (Field #5) was bush hogged, planted to wheat and 50 bales of wheat straw were produced and disseminated to the property for construction projects. In 2002 this same Field #5 was converted to warm season grasses and has been prescribed period burns to maintain these grasses. In the last 5 years Field 3 was also prescribed a burn to reduce extensive fescue thatch so that early successional annual plants could emerge. The small north field (Field F) was allowed to regenerate to hardwoods. In 2010 the first tract inventory was completed by Forester Josh Kush. The findings of this inventory are highlighted in the report below.

Landscape Context
Closed canopy deciduous forest is the most common and dominant cover type in this area. Near this tract (to east and north) are additional old fields that have been converted to early succession and warm season grasslands for wildlife habitat. Some of these early successional openings are mowed periodically to prevent and discourage woody stem encroachment. This tract lies directly north and east of the Property's Backcountry Area.

Topography, Geology and Hydrology
The east to southeast boundary of the tract is strong ridgeline. Several fingerlike ridges extend out and slope to the north to northwest boundary of tract. The tract is bounded to the west and north by two mapped intermittent streams. The water from this tract flows down Bud Davis Hollow into Robertson Creek and then into the Indian Creek. The Indian Creek eventually drains into the White River. This tract falls within the Indiana Creek-Robertson Creek watershed. The underlying bedrock is siltstone interbedded with sandstone and shale.

Soils
<u>BgF-Berks-Trevlac-Wellston Complex 20-70% slope</u>
The available water capacity is very low in the Werks soils, low in the Trevlac soil and high in the Wellston soils. The Berks soil is moderately rapidly permeable and the Trevlac and Wellston soils are moderately permeable. Surface runoff is very

rapid on all three soils. This Complex has a land capability class of VIIe and a woodland ordination of 4R.

WeC2-Wellston-Gilpin silt loams 6-20% slope
This soil is found along the tract's ridgetops. The water capacity is high in the Wellston soil and low in the Gilpin soil. Both soils are moderately permeable. This soils has a site index of 90 for yellow poplar and a land capability class of IVe and a woodland ordination of 4A.

Be-Beanblossom channery silt loam, occasionally flooded
This soil is found in the bottomland areas along the western creek. It is formed from channery alluvium. Slopes range from 1 to 3 %. It has a very low available water capacity and is moderately to rapidly permeable. Overall this soil is well suited to woodlands. Wetness is a concern for harvesting and planting operations, but can be managed by avoiding wet times of year. Beanblossom holds a 95 SI for yellow poplar, a land capability class of IIIw, and woodland ordination symbol of 7F.

WaD-Wellston – Berks – Trevlac Complex, 6 to 20 % slopes
This complex is found along the tract's main ridge. It formed from weathered sandstone-shale-siltstone bedrock at a depth of 51" with a loess cap. The slopes range from 6 – 20%. This soil is unsuited to urban development due to slope. It is very well suited to forestry, with only moderate equipment limitations due to slope and depth to bedrock on some components of the Complex. Following natural contours for road construction and land shaping can mitigate erosion hazards. This soil has a site index of 70 for northern red oak and a woodland ordination symbol of 4A.

Access
Access to this tract is excellent through a fire lane/haul road that is located off of Bear Creek Road. Although unimproved for several years, skid trails within the tract are still visible from the 1983 harvest.

Boundary
This tract is bounded by State Forest on all sides. The south- southeast boundary is made up by a strong ridgeline and the tract's access road. The north and western boundaries follow mapped intermittent drainages that intersect and drain into Bud Davis Hollow.

Wildlife
Wildlife resources in this tract are plentiful. This tract supports many woodland species including but not limited to white-tailed deer, wild turkey, eastern gray squirrel, fox squirrel, chipmunks and various songbirds. Trees and shrubs within the tract produce hard and soft masts that provide the food necessary to sustain healthy animal communities. This tract contains a 4 acre maintained wildlife opening. There

is also a wildlife pond at the south end of the tract. The Natural Heritage Database identified several elements within the surrounding matrix of the tract.

Crotalus horridus or the Timber Rattlesnake, sighted in 2001 and 2002, is a species of special concern in Indiana. This species suffers from triad of obstacles: habitat destruction and fragmentation, sport hunting, forest maturation, and road mortality. Future management activities will most likely employ single tree and group selection harvesting. A proposed harvest would increase the tract's horizontal heterogeneity as well as increase viable breeding grounds for the snakes in this area.

Clonophis kirtlandii or the Kirtland's Snake was sighted on this tract in 1997. The Kirtland's Snake is on the Indiana endangered species list. This snake is a reclusive reptile that lives in grassy areas and stays under objects or travels underground. According to Natureserve.org it is confined to the Midwest, with its range centered in Illinois, Indiana, and Ohio. It has declined in distribution and abundance due to the loss of prairie wetland habitat. The snake is rare and local throughout its range and its remaining suitable habitat occurs rarely and is often subject to human alteration. The creation of a warm season grassland within this tract in 2002 is a positive habitat enhancement that should maintain the continued presence of this species.

Rubus centralis or the Illinois Blackberry is an endangered plant species in Indiana. It was noted within the surrounding area of the tract in 1922. According to NatureServe.org, this plant requires disturbance and sunlight. It will not persist if there is thick growth, heavy shading, and the absence of disturbance within the habitat. Most often they are found along trails or where trees have fallen. Harvesting methods that employ single tree and group selection openings will promote the habitat required for this species.

Dry, Dry-Mesic and Mesic upland forest were identified in 1995 as representations of high quality natural communities surrounding the tract. Both dry and dry-mesic upland forests are considered secure both at a State and global level. Mesic upland forests are considered to be rare at a State and global level, but are common locally.

Wildlife Habitat Features

The Indiana Division of Forestry recognizes the potential to enhance wildlife habitat, including that of the Indiana Bat, on its lands by implementing comprehensive management principles. These management principles include obtaining data on size, species, and numbers of live legacy trees, snags, and cavity trees. Snag trees and some specific species are an integral part of the Indiana bat policy as they are prime roosting sites for maternal colonies.

Table 1. Legacy Trees inventoried August 2010 on 6421425.

Size Classes	Maintenance Level	Inventory	Available For Removal

11"+ DBH	792	1320	528
20"+ DBH	264	250	-14

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

Table 2. Snag Trees inventoried August 2010 within 6421425

Size Classes	Maintenance Level	Optimal Level	Inventory	Available above Maintenance	Available above Optimal
5"+ DBH	352	616	315	-37	-301
9"+ DBH	264	528	222	-42	-306
19"+ DBH	44	88	12	-32	-76

The wildlife habitat feature tract summary outlines the desired number of legacy trees, snags and cavity trees over the entire tract. Currently this tract does not meet the maintenance level for Legacy trees in the 20" + DBH or Snags in the 5"-19"+DBH. Snags could be created during post-harvest timber stand improvement in the 5"-19"+DBH class as well as focusing on retaining legacy tree species.

Exotics

Although no sightings of Japanese stiltgrass were observed during the inventory, patches likely exist along the roadway. Stiltgrass populations have been documented as increasing throughout the Property and the seed is casually spread by vehicles, hikers and hunters as well as by many animals including white-tailed deer. Disturbed areas are most often areas where the grass invades. Treating accessible areas with herbicide and prompt revegetation of disturbed areas within the harvest area will be prescribed to reduce habitable sites.

Recreation

Due to the access road into this tract great opportunities exist for recreational users. This tract has no established recreational facilities but some of the more common recreational activities may include: hunting, hiking, bird watching, nature study, wildlife viewing & mushroom hunting. The southern tip of the tract borders a portion of the Tecumseh Trail and about 2.5 acres of the tract also lay within the Y-MMSF Backcountry Area.

Cultural

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

Tract Inventory Summary

On August 23, 2010 the tract's first resource inventory was completed by Forester Josh Kush. The summary data for the overstory sawtimber inventory is in the following table.

Species	Harvest	Leave	Total
Chestnut Oak	144,530	159,510	304,040
Black Oak	25,870	84,630	110,500
Northern Red Oak	33,670	53,400	87,070
Yellow Poplar	51,640	30,000	81,640
Scarlet Oak	22,630	41,670	64,300
White Oak	4,290	51,650	55,940
Sugar Maple	5,670	12,630	18,300
Largetooth Aspen	14,510	1,560	16,070
Sassafras	10,290	2,570	12,860
White Ash	8,620	0	8,620
American Beech	0	6,650	6,650
Basswood	4,210	1,420	5,630
Bitternut Hickory	0	5,140	5,140
Red Elm	1,550	2,200	3,750
Pignut Hickory	0	1,940	1,940
Red Maple	0	1,940	1,940
Tract Total Bd. Ft. Volume	**327,480**	**456,910**	**784,390**
Total Bd. Ft./Acre	**3,721**	**5,192**	**8,914**

The predominant timber type within this tract is mixed oak with some yellow poplar. Overall, the sawtimber species composition is about three quarters oak (BLO, CHO, REO, SCO, and WHO), with the remaining comprised of mixed hickory, poplar, maple, elm, ash, beech, basswood, and aspen. According to the Gingrich stocking guide the tract is overstocked at 104%. The tract contains 66 sawtimber trees per acre and has an overall basal area of 121.5 square feet per acre. Understory regeneration is composed primarily of shade tolerant beech-maple with some sassafras and hickory. According to the current forest inventory, the present tract volume is 8,914 BF/Acre and the total number of trees per acre is 215. Overall, the tract's harvest volume is 3,721 BF/Acre with the residual volume at 5,192 BF/Acre. Inventory notes indicate the tract could benefit from an intermediate harvest to improve croptree spacing and to remove poorly formed & low vigor stems. At least one area noted during inventory contained numerous overmature stems that could benefit from regeneration. During timber marking operations more openings may be prescribed in areas of low basal area, overmature timber, or areas with poor quality. Combining this harvest with a neighboring tract would reduce sale expenses.

Tract Silvicultural Prescription and Proposed Activities

This tract would benefit from forest management as the tract is currently overstocked. A combined sale with a neighboring tract (Y1420) is planned for 2011. An improvement thinning utilizing singletree and group selection cuts will improve overall stand health

and improve croptree spacing. Many of the species identified from the Natural Heritage Database will benefit from a harvest by enhancing the tract's understory habitats. Singletree selection will remove poorly formed, low vigor and mature stems between regeneration areas as well as improve the spacing of croptrees to increase their growth. As this tract lies within the Brunner Tract Forest and Wildlife Management Area, the tract will be reviewed during timber marking to see if larger regeneration openings can be created to increase early successional wildlife habitat. Group selections will be marked in areas where inadequate stocking, poor quality, or mature timber occurs.

The impacts to the forest resource in the event of a future harvest should be temporary and minimal. Some soil disturbance does occur due to equipment operation on skidtrails, haul roads and log yards. Following the completion of a harvest closeout operations are planned. These operations are planned to follow the Indiana Logging and Forestry Best Management Practices field guide: constructing waterbars on skid trails, smoothing haul roads and log yards as well as seeding and strawing areas that have exposed soil. Appropriate buffers to the wildlife pond and cultural sites will be observed. Skidtrails nearby to the pond will be routed downhill and follow natural contours of the topography. If necessary, straw bales or silt fences will be installed around the pond to minimize impacts from harvest operations. This will be determined during harvest operations by administrating forester. Normally all closeouts will be completed within 2 weeks of the harvest completion. The harvest site will again be monitored by Division staff for the application and effectiveness of the closeout of the timber sale (BMP field review).

Postharvest management will include the application of TSI directed towards felling or girdling trees remaining in group selection openings to promote full sunlight reaching the forest floor. Also, trees can be girdled in forest canopy areas between group selections to create snags for enhancing wildlife habitat features as discussed earlier. In 20 years the tract will be re-inventoried and the management guide will be updated.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
DHPA Field Review	Winter 2010-2011
Sale Roadwork improvements	Winter 2010-2011
Timber Marking	Winter 2010-2011
Combined Tract Sale w/T20	Spring 2011
Combined Tract Harvest w/T20	2011-2013
Post Harvest TSI	2011-2013
Post Harvest BMP Field Review	2012-2013
Management Reinventory & Guide	2030

Attachments (in Tract File)

Gingrich Stocking Charts
Ecological Resource Review
Natural Heritage Database Review
Wildlife Habitat Review

Brunner Tract Past History Map
Archeological Clearance/Roadwork Request
Soil, Stand, and Roadwork Maps
TCruise Reports

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