

FOREST MANAGEMENT PLAN

For the

NELSON-STOKES-LEWMAN WOODLAND

Prepared by Don Carlson-Purdue University Forester
June 2000

1. Legal Description and Location

Portions of Sections 4 & 5, T15N, R5W, in Clinton Twp., Putnam County, Indiana. The property is comprised of 160.7 acres and is divided into three compartments. Compartment 1 is 31.45 acres, compartment 2 is 89.50 acres, and compartment 3 is 39.75 acres. See attached maps for compartment location. The property is located approximately 5 miles west of the intersection of Hwy 231 and Hwy 36. Property is accessed off of what was 700 West on the north side of Hwy 36.

2. Physical Description

Soils: (Hennepin-Russell-Miami) This complex consists of soils found on steep slopes (Hennepin) to soils found on less sloping areas and on ridges between slopes. Soils vary from shallow, well to excessively drained Hennepin soils, to deep, moderately well and well drained Russell and Miami soils. These soils either developed in calcareous glacial till or in a thin mantle of windblown loess over till. Erosion is the major management concern.

Topography: The land is rolling to steep and ranges from 700-810 feet above sea level.

Property lines: The forest is bounded on the north by land owned by the U.S. Government on the low ground along Big Raccoon Creek. The southern and western edges of compartments 1 and 2 are bounded by a 'standing' fence. The eastern edge of Compartment 2 is bounded by a power line right-of-way. The 31.45 acre compartment 1, is less well defined and has limited access.

3. Forest Description

- **Stand Characteristics:** This forest is uneven-aged overall with smaller pockets of even-aged timber primarily due to past forest management and the abandonment of old fields and pastured areas 50-80 years ago.
- **Species Composition:** The older portions of this forest contain a significant proportion of sugar maple and American beech in the over-story. These areas are on the steepest slopes and tend to be concentrated in the north-central area of compartments 2 & 3.

The rest of the forest contains a mix of oak, hickory, sugar maple, ash, and tulip poplar in the over story and sugar maple and beech in the understory.

The areas which have been opened up to direct sunlight have primarily regenerated to tulip-poplar, sassafras, elm, and ash with a smaller component of black cherry, sugar maple, oak, and black walnut.

Understory shrubs/trees such as bladdernut, paw paw, dogwood, and spicebush may tend to hinder desirable naturally regenerating trees in disturbed, open areas.

- General Size Classes: The majority of the overstory is composed of small to large sawtimber-sized trees except in openings created in the 1992 harvest or 1998 wind damaged pockets.
- Stocking: The stocking level is generally between 80-110 square feet of basal area throughout much of the forest. All in all, stocking levels are adequate to maintain quality, vigorous growth of the crop trees. The only areas that are under stocked are the 3-4 areas that were opened up in the 1992 harvest and were then opened up more during a 1998 wind storm.
- Inventory Data: See Appendix A: 1-2 (Compartment 1)
Appendix B: 1-2 (Compartment 2)
Appendix C: 1-2 (Compartment 3)

4. Unique Features

- Physical: Raccoon Creek runs along the northern edge of this woodland. The US Government owns a flowage easement on the lowest land along the creek. The boundary is marked with small steel posts and blue painted trees.
- Biological: This forest provides excellent wildlife habitat for a variety of species, none of which are known to be endangered or threatened.
- Cultural: none

5. History

- Acquisition Date: Compartment 2 was gifted to Purdue University in 1960. This compartment had been classified forest and apparently had been rather well managed. Compartments 1 and 3 were purchased in 1966.
- Fire: There is evidence of at least one fire 40-60 years ago that damaged trees in the central and northern portions of compartment 1. More recently, a 1998 fire burned the northeast portion of compartment 2 and the western half of compartment 1. This recent fire does not appear to have damaged any of the larger trees.
- Grazing: Compartments 2 shows no signs of being grazed. Compartment 1 was most likely heavily grazed, especially on the north half, until the 1950s. Compartment 3 was most likely grazed in the past but the present larger trees show little sign of damage from cattle.
- Inventory: Record of the initial installation of Continuous Forest Inventory (CFI) plots has not been found. During 1986-87, the CFI plots were re-measured. In 1992, the diameters of trees within the CFI plots were recorded.
- Installation of Research Plots: Dr. Phil Pope conducted a study dealing with forest soils in the early 1990s.
- Harvests: The first record of any harvest activity was an apparently well managed harvest on compartment 2 in the 1950s. The majority of compartment 1 was

harvested to a 12 inch diameter limit in the late 1950s. Compartment 3 was harvested just prior to acquisition in 1966. There is no detailed information on these initial harvests.

In 1992-3, Compartment 2 was selectively harvested. During this sale, a total of 982 trees were marked for harvest with a total of 279,981 board feet. An additional 124 culls were included in this sale (See Appendix 1 for year 1992 volume summary). This sale was sold to Pingleton Sawmill in Putnam County for \$232,600. On the down side, the careless harvesting of this timber resulted in excessive residual damage to the remaining high quality timber. All in all, the timber in this woodland appears to have been marked adequately to improve the quality and vigor of the highly productive forest.

During the summer of 1998, very strong winds hit this woodland along with many other woodlands over a six county area. The aftermath of this storm left many trees in compartment 2 and some in compartment 3 uprooted, broken, or bent over. The majority of the damage was concentrated in the areas that had been heavily cut or damaged during the 1993 harvest. A salvage/improvement harvest was marked in March and April of 2000. Two separate volume summaries were completed to keep the salvage volume separate from improvement harvest volume. Several openings have been marked for this harvest to naturally regenerate severely damaged areas and areas containing over mature timber. The total number of trees to be harvested, including culls, is 821 trees for a total volume of 168,519 board feet. See appendix 2 &3 for year 2000 volume summaries.

- Specific Management Activities: Vine control was completed in compartment 1 during May of 2000. No other record of management has been found.

6. Forest Management Concerns

Accessibility is the major concern for this property. As of now, the only legal access to the property is where the old county road 700 West intersects the southeast corner of Compartment 2. Presently, there is very limited parking available on Purdue's property at this corner. The rough topography of this corner provides for limited use of this area other than for a potential parking lot.

The access to Compartment 1 is unclear. Compartments 1 and 2 intersect at a quarter, quarter section point. This provides no legal access since this is merely a "point" on the ground. The southeast corner of Compartment 1 is lacking a 100' X 200' block out of the corner. This block is between the end of old 700 West and Compartment 1. However, the original access has always been through this block as noted by the presence of the original roadbed running on the south edge of Compartment 1. This road was originally know as the Russelville Road and provided excellent access.

7. Management Objectives

Sustainable timber and wildlife management are the primary goals on this forest. This forest is also to be used for forest research and forest management demonstration purposes.

8. Implementation Plan

Realizing the value of this forest for its research potential, re-measuring the CFI plots should be a priority. All of the plots need to be re-measured prior to the 2000 harvest with a follow-up analysis of the data. The woodlands management forester should see to the completion of the data inventory and its analysis. Following this inventory, additional re-measurements and analysis should occur every five years.

The timber presently marked for the salvage/improvement harvest needs to be sold as soon as possible. The proposed sale date is July 28, 2000. Prior to the harvesting, vine control should be completed on Compartments 2 and 3 according to the Timber Stand Improvement Guidelines for Purdue Forest Lands. After the harvest, post-harvest timber stand improvement needs to be completed also according to the above guidelines.

Access must also be improved to provide better accessibility for faculty, students, and forest management. A parking lot needs to be established in the southeast corner of Compartment 2 by the end of 2000. A solution to the lack access to compartment 1 also needs to be found. The solution may be to buy an easement through the 100' X 200' block owned by Peter Lachman or, if possible, buy the block itself. This block is level and would provide for an excellent parking area or log landing. Finally, a permanent access easement should be sought to improve logistical access to Compartments 2 and 3. These access situations should seek to be resolved as soon as possible, hopefully by the end of 2001.

9. Summary

Year	Compartment	Task to be completed
7/2000	2 & 3	Market and sell salvage/improvement harvest. Complete vine control prior to harvesting. Complete post-harvest timber stand improvement.
12/2000	1,2, & 3	Re-measure CFI plots.
12/2000	2	Establish parking lot in southeast corner.
12/2001	1,2, & 3	Establish permanent means of access.

Nelson-Stokes-Lewman Purdue University Woodland



**Amendment to the
Forest Management Plan
for the
Purdue University
Nelson-Stokes-Lewman Woodland**

By Don Carlson- Purdue University Forester
1-5-2001

Updated 2-19-2002

On July 19, 2000, the timber marked for salvage and improvement was sold to Eldon Shultz of Peru, IN. A total of 821 tree (includes 65 culls) with a total of 168,519 board feet were purchased for \$51,900.

By July 26, 2000, every other CFI plot on all three compartments were remeasured. It was determined that the intensity of the inventory could be cut in half and still yield accurate data.

During October 2000, a parking lot and short access road were completed in the southeast corner of compartment 2. The parking lot is roughly 60' X 60'.

On December 4, 2000, an access road was completed allowing timber to be yarded on the ridge to the north of the parking lot. This road will alleviate the access problems for compartments 2 and 3.

On December 6, 2000, 59 additional trees (includes 8 culls) with a total of 12,690 board feet were sold to Eldon Shultz of Peru, IN for a sum of \$4,500. Many of the trees were located in the vicinity of the new access road and were therefore either removed or damaged during construction of the road. Several of the trees were more noticeably in poor health and were removed in order to enlarge a natural regeneration opening to the west of the log yard.

On September 7, 2001, sold dying WHO (30" dbh w/850 BF) for \$800 to Mark Shultz.

Future management to be implemented on this woodland.

- 1) Complete the post-harvest timber stand improvement once logging is completed.
Completed P-H TSI on 4/30/01.
- 2) CFI plots will need to be remeasured every five years starting with 2005.
- 3) Supplement the CFI inventory with the initiation of wildlife / wildlife habitat inventory. This wildlife component of the inventory is in its early stages but will probably focus on song birds and amphibians. The goal is to develop and implement this inventory by the next CFI remeasurement in 2005.
- 4) Develop GIS for property by 2002.
- 5) The next harvest will take place during 2010-2015 barring unforeseen natural disturbances warranting an earlier entry.

Research on Purdue University Nelson-Stokes Property in Putnam County, Indiana.
2001

By: Don Carlson of Purdue University

Comparison Study of Bare Root vs. Containerized Spring Planted Red Oak Seedlings
Interplanted with White Pine and Pitch Loblolly Pine in Natural Regeneration Openings.

In this study, I plan to compare the growth and survival of red oak seedlings which were transplanted to a natural regeneration site as either bare root trees or containerized trees. The study will take place in one opening which is roughly 200 feet by 800 feet (~3.5 acres). The opening is rolling ground with slopes facing all directions.

The trees will be on a spacing of roughly 12 X 12. With a general width of 200 feet, we can plant at least 16 rows of trees for the entire length of the opening. Only the inner eight rows of trees will be included in the study. The outside rows will provide a buffer against deer browse and other potential variables such as shade. The inner study rows will alternate between bare root and containerized trees. Within each study row, every other tree will be a pine (White or Pitch Loblolly) to nurse the red oaks and help control competition.

Therefore, a total of 1,120 trees are needed. To accommodate the state tree nurseries baling method of 100 trees per bale and to ensure the ability to grade out small seedlings, a grand total of 1,440 trees will be planted and are composed of the following:

140 one gallon container red oaks

200 white pine

200 pitch loblolly pine

900 red oak

Planted two areas instead of one.

East Area north of log yard.

Trees were planted in March 2001. Planted 14 rows of study trees containing 12 trees per row. Rows alternate between 1-0 Vallonia Nursery trees and 1 gallon container trees from Berg Warner Nursery. A total of 84 bare root trees and 84 container trees were planted on this area in north-south rows. Trees are numbered to keep track of height growth and survival. Two buffer rows on the south edge of this area were planted using red oak and white pine in east-west rows. Trees were remeasured in October 2001.

West Area located ~ 200 feet west of East Area.

Trees were planted in March 2001. Planted 8 rows of study trees containing 19 trees per row. Rows alternate between 1-0 Vallonia Nursery trees and 1 gallon container trees from Berg Warner Nursery. A total of 76 bare root trees and 76 container trees were planted on this area in east-west rows. Trees are numbered to keep track of height growth and survival. No buffer rows were established. Trees were remeasured in October 2001.

A supplemental study could be done to compare deer browse on the white pine vs pitch loblolly. This study was not established. However, it appears the deer have not bothered the pitch loblolly where exposed to browsing.

A second regeneration study is being planned for the fall of 2001 on another opening on the same property to again compare bare root seedlings to container seedlings in a fall planting setting. Hopefully, we will have the option to plant a larger variety of oaks dependent upon availability.

This study was implemented on the east edge of the existing log yard. Trees were planted in November of 2001. Planted 6 rows of study trees containing 13 trees per row. Rows alternate between 1-0 Vallonia Nursery trees and 3 gallon container trees from Berg Warner Nursery. A total of 39 bare root trees and 39 container trees were planted on this area in north-south rows. Trees are numbered to keep track of height growth and survival. No buffer rows were established. Soil was compacted in some locations.