

FOREST MANAGEMENT PLAN

For the Finley Memorial Forest

Prepared by Don Carlson-Purdue University Forester
November 2000

1. Legal Description and Location

The Finley Memorial Woodlands is legally described as the northeast quarter of the northeast quarter of Section 36, Township 13 North, Range 6 West, containing 40 acres more or less in Clay County, IN.

The property is located approximately 3 miles east of Harmony, IN and about 1 ¼ mile south of Highway 40 on County Road 500 East. County Road 500 East is the county line road between Clay and Putnam Counties. The one quarter mile square property lies on the south west corner of County Road 500 East and County Road 1000 North.

There is an access lane off of County Road 1000 North on the western edge of the property. The lane is blocked by a locked cable. To obtain a key for the lock, contact George Parker or Don Carlson of Purdue University Forestry and Natural Resources Department.

2. Physical Description

Soils: The upland soils are classified as Hickory-Cincinnati-Ava. These soils are located in gently sloping to very steep, well drained and moderately well drained sites formed in loess and the underlying glacial till. Runoff and erosion are major concerns and rooting depth is a major tree growth limitation. In a site index study we found red oak SI = 79 and tulip poplar SI = 95.

The bottomland soils are Stendal-Shoals-Newark with an inclusion of Lobdell. The soils are nearly level, somewhat poorly drained (Lobdell moderately well drained) and formed in alluvium. Shoals is the dominant soil, and flooding and wetness are the major problems. Site index is reported to be 85-95 for tulip poplar and pin oak. In a site index study we found that Lobdell had a black walnut SI = 90 and a tulip poplar SI = 96.

Topography: The property is rolling with a stream flowing north to south through the center of the property.

Acreage: The total property contains 40+/- acres of which approximately 37 is established forest while the remaining 3 acres contains a gas line right-of-way and is therefore not in trees.

Property lines: The forest is bounded on north by CR 1000 North and on the east by CR 500 East (county line road). The west property line is distinguished by a standing fence. The fence is in poor condition on the southern end of the west line. The south property line is poorly defined. A portion of an old fence exists on the western end of the south line. The rest of the

line is roughly apparent by the changes in forest structure due to more intensive harvesting and grazing of the neighboring property.

3. Forest Description

- **Background:** The present forest is a direct result of its past management. In 1923, Mr. Finley described the forest as being overgrazed and eroded with the only trees being on found on steep slopes. Between 1923-40, 15,000 trees plus unrecorded amounts of seed were planted. The forest prospered under the protective hands of the Finley's. The forest had two separate harvests in the early 1960 that removed most of the over mature / defective old pasture trees. A light salvage sale was conducted in 1988.
- **Stand Characteristics:** The forest is pocketed with even-aged stands of trees while overall the forest contains several different age classes of trees and limited understory. The only areas containing dense understory vegetation is where grapevines have created arbors from the 1988 salvage harvest and in the poorly drained bottomland areas that have experienced repeated mortality of elm and ash.
- **Species Composition:** The upland forest canopy is composed of tulip poplar, white and red oak, hickory, pine and spruce, ash, and beech. The understory consists of mainly sugar maple, beech, elm, soft maple, and miscellaneous trees such as dogwood.

The bottomland forest has a good mix of black walnut, soft maple, ash, elm, tulip poplar, and sycamore along with a few pin oak and white oak. There are relatively few trees growing in the understory.

- **General Size Classes:** The forest has an overall average diameter at breast height (dbh) of 11.8 inches. The forest is primarily small to medium saw log sized trees with scattered trees over 30 inches dbh.
- **Stocking:** The forest as a whole has a basal area (BA) of 135 square feet per acre. This is high for this forest as is evidenced by increasing stress and mortality of the overstory trees. Tulip poplar and white oak represent over half of the BA in the forest overall. In some areas where the pines were planted in the 1920-30's, the stocking is approaching 200 square feet of BA per acre.

The upland forest reflects a majority of the overstocking. The bottomland forest appears healthy and vibrant as the trees are more dispersed due to natural mortality unrelated to overstocking.

- **Inventory Data:** The forest was first inventoried in 1958. During that year, a 100% inventory was completed of all trees greater than 3.5 inches dbh. Also, during that same year, 30 permanent one-fifth acre plots were established. These one-fifth acre plots have become Continuous Forest Inventory (CFI) plots that are to be measured every five years. They were most recently re-measured in 2000. The only moderately detailed comparative analysis of the CFI data was done in 1985. The 2000 CFI data was

computed using an inventory program that lacks the overall ability to use all of the CFI data but produces a nice overall representation of the forest. One problem with the 2000 analysis is that the volume computations fail to incorporate defect and therefore produce volume estimates that are too high. Attached are Appendices A, B, and C (p.1-2) to show some of the analyses which have been completed using the CFI data. Additional analyses have been completed and are available by contacting Don Carlson, Purdue University forester.

4. Unique Features

- Physical: This woodlands has a gas pipeline right-of-way running east-northeast from the southwest corner of the property. The pipeline is approximately 100 feet wide and 1200 feet long. *Marathon Pipeline 217-382-2277; contact: Brad Burson 217-232-0773.*
- Biological: This forest provides excellent wildlife habitat for a variety of species, none of which are known to be endangered or threatened.
- Cultural: The Finley Memorial Forest has a common history of abuse and but a unique, detailed, recorded, and successful effort at reforestation. Mr. Finley went to great lengths to make this a true memorial to his parents who pioneered this farm. The remains a letter "F" can still be seen in the northwest corner of the property as it was formed by planted white pines.

5. History

- Acquisition Date: This property was gifted to Purdue University in 1959.
- Fire: The only fire recorded on the property was in the spring of 1935 when a neighbors trash fire spread through a portion of the forest and destroyed at least one tree planting area. The area was replanted the same year with 300 tulip poplar seedlings.
- Grazing: This forest was heavily grazed and eroded until the early 1920's. Some of the old field areas were reported to be in such poor condition that they "couldn't even grow weeds."
- Inventory: The forest was first 100% inventoried in 1958. That same year, the original 30 CFI plots were installed. The CFI plots have been measured in 1958, 1961, 1965, 1970, 1980, 1985, and 2000.
- Installation of Research Plots: No record of past research has been found.
- Harvests: The records show that this forest has undergone 3 separate timber harvests. The first occurred in 1960 when 108 trees containing 26,648 board feet were initially harvested to remove over mature timber. This timber brought a price of \$825.

The second sale that occurred in 1963 was primarily a pulp sale that sold for a total of \$227. The total volume of low grade logs from this sale was 6,969 board feet. The rest of the trees were chipped for a total weight of 313.5 tons. The total number of trees harvested is unknown.

The last sale was completed in 1988. It was considered a salvage sale. The primary focus of the sale was two down white oak trees (volume unknown) that were sold for \$2,000. Another 14,375 board feet of several dead trees and about 100 black locust trees were sold for another \$1,029.

Therefore, the total income derived from timber on the Finley Memorial Forest since 1959 is \$4,081. The total amount of timber harvested is 313.5 tons of pulp and 47,992 board feet.

- Specific Management Activities: Besides the timber harvesting, the only timber management recorded is timber stand improvement completed in 1964 and vine control completed in August 2000. The access lane starting at the northwest corner was cleared in August 2000 and a cable gate was installed.

6. Forest Management Concerns

The major concerns for this forest are to protect the forest from eroding and to protect the stream and watershed through proper implementation of best management practices during timber harvests. Any activity on this forest must be cautious around the gas pipeline right-of-way.

7. Management Objectives

The original objectives for ownership of this property were:

- 1) To put the woodland under management by harvesting mature trees and deadening cull and non-desirable trees.
- 2) To investigate the marketing potentials for diversified products from a small woodland.
- 3) To practice model (but practical) management methods which will have demonstrational value for adult education purposes.

8. Implementation Plan

The forest is in need of a timber harvest within the next 2-4 years. The basic objective of the harvest will be to reduce the stocking level of the forest and thereby increase the health, vigor, and productivity of the forest. The BA should be reduced to approximately 90 square feet per acre. This can be accomplished by harvesting 6-10 trees per acre and for roughly 2000 board feet per acre. This will result in harvesting roughly 20% of the volume of this highly productive forest. Several small forest openings will be created during this harvest primarily occurring in areas containing pockets of an over mature, declining overstory and in lowland areas suffering high mortality. Caution must be exercised to minimize marking timber around existing grape vine arbors to prevent enlarging them further. The harvest must be followed up by timely post-harvest timber stand improvement.

Realizing the value of this forest for its research potential and re-measuring the CFI plots should be a priority. All of the CFI plots need to be re-measured in 2005 with a follow-up analysis of the data. Following this inventory, additional re-measurements and analysis should occur every five years.

9. Summary

Year	Task to be completed
2001-3	Mark and market timber according to implementation plan guidelines. Follow up harvest with post-harvest timber stand improvement.
2001	Design and display informative sign on property.
2005,10,...	Re-measure CFI plots.

Appendix A

Finley Memorial Woods in 1958, 1985, and 2000.

Species Composition for trees 9.0 inches DBH and greater for all CFI plots.

Also includes percent change in number of trees by species.

Species	1958 (30 points??)		1985 (29 points)			2000 (29 points)			
	# trees	% of total	# trees	% of total	Change in # (1958-1985)	# trees	% of total	Change in # (1985-2000)	Change in # (1958-2000)
White Ash	7	2.6	43	11.4	514%	34	8.5	-21%	386%
Beech	18	6.5	9	2.4	-50%	15	3.7	67%	-17%
Elm	5	1.7	9	2.4	80%	11	2.7	22%	120%
Hickory	14	5.2	18	4.8	29%	24	6	33%	71%
Sugar Maple	6	2.2	14	3.7	133%	27	6.7	93%	350%
Black Oak	11	4.1	1	0.3	-91%	0	0	-100%	-100%
N. Red Oak	13	4.7	14	3.7	8%	16	4	14%	23%
White Oak	60	21.5	48	12.7	-20%	53	13.2	10%	-12%
Yellow Poplar	60	21.5	113	30.0	88%	118	29.4	4%	97%
Black Walnut	9	3.2	23	6.1	156%	22	5.5	-4%	144%
Miscellaneous	75	26.8	85	22.5	13%	82	20.3	-4%	9%
Total	278	100	377	100.0	36%	402	100	7%	45%

Appendix B

Finley Memorial Woods – 1985 -Data Base 30 CFI Plots- 40 Acres

Per acre Figures of CFI plots for trees 9.0 inches dbh and greater from 1958-2000.

Year	Basal Area	Number of Trees	Board Feet (Doyle)
1958	67	47	3509
1961	64	49(a)	3249(a)
1965	52	37(b)	2847(b)
1970	59	42	3633
1980	84	59	5793
1985	94	63	6788
2000	118	69(c)	12305(c/d)

- a. 1960 timber harvest of 108 trees containing 26,648 board feet.
- b. 1963 timber harvest of 6,969 board feet plus additional 313.5 tons pulpwood. Number of trees unknown.
- c. 1988 timber harvest of two, large, salvage white oaks and several other dead trees plus approximately 100 black locust trees. The volume of the dead trees and locust trees totaled 14,375 board feet. The volume of the two salvage white oaks is unknown.
- d. The volume figure given does not take defect into consideration to the extent that previous inventories did. Therefore, this volume estimate may be 1,000-2000 board feet too high.