RESOURCE MANAGEMENT GUIDE

Clark State Forest — Compartment 13 Tract 7
Forester Brian Backhaus — Date June 22, 2009
Management Cycle End Year 2029 — Management Cycle Length 20 years

Location

Compartment 13 tract 7 is located in section 265 of the Clark Military Grant in Clark County. The tract is approximately four miles southwest of the town of Henryville, Indiana.

General Description

The tract is 81.3 acres with a distinct mixture of two major cover types. The major canopy cover is an oak/hickory mix, which cover approximately 44 acres and whose primary species are white oak, chestnut oak, scarlet oak and pignut hickory. There is also a well-established presence of Virginia pine.

History

The area of land was acquired by the State of Indiana on 03/26/1940 from Sarah J. Burdge. A total of 98.5 acres was acquired, however, only 81.3 acres are within the tract. Current forest cover in the southern part of the tract and along the Right Drain on the western portion of the tract suggests that the area was farmed before state ownership. The presence of Virginia pine is typical of this type of land use before state control.

Landscape Context

Most of the landscape is surrounded by state forest of similar cover type. As a whole, the majority of the landscape is homogenous with different vegetation found in small pockets. To the south of the tract there is a small privately owned area that appears to be pastureland. In general, the theme is conversion of farmland to forest.

Topography, Geology and Hydrology

The general topography is sloping hills that are on the western side of a ridge that descends toward the southeast. The top of this ridge travels along the eastern border of the tract. This is all underlain by shale bedrock that is part of the Knobstone Escarpment. The intermittent 'Right Drain' borders the tract on the west side. This stream joins the 'Wrong Drain' downstream to form Blue Lick Creek near Memphis, Indiana.

Access

The best access to the property is on Cemetery Road across from the Mountain Grove cemetery. Directly across the road is a horse trail that leads to the eastern edge of the tract. The horse trail does continue on toward other roads, but would

require further distances to a road, along with a steeper grade to exit the forested area.

Boundary
Most of the tract is surrounded by state forest; however, two faces on the southern edge border private properties that are also wooded lots.

Wildlife

Wildlife Habitat Feature Tract Summary

Inventory Filename: C:\Documents and Settings\Greg\My
State Forest: Clark **Compartment Number:** 13 **Tract:** 07

Reference Number: 6301307 **Tract Acres:** 81.3

	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal	Marked For Harvest	Residual Above Maintenance	Residual Above Optimal
Legacy Trees *								
11"+ DBH	731.7		2228	1496				
20"+ DBH	243.9		365	121				
Snags (all species)								
5"+ DBH	325.2	569.1	926	601	357			
9"+ DBH	243.9	487.8	538	294	51			
19"+ DBH	40.65	81.3	55	14	-26			
Cavity Trees (all species)								
7"+ DBH	325.2	487.8	35	-290	-453			
11"+ DBH	243.9	325.2	35	-209	-290			
19"+ DBH	40.65	81.3	0	-41	-81			

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

Eastern box turtle, white-tailed deer, American toad, turkey vulture, red-tail hawk, and various song birds were observed while inventorying this tract. The two forest types found in this tract provide a good combination of habitat. The oak-hickory stand provides ample hard mast for wildlife food, while the deteriorating pine stand has lots of snags, downed woody debris, and a thick understory for wildlife cover.

Proposed management activities in the mixed hardwood portion of this tract would have significant short term effects on wildlife cover. The regeneration of the pine-mixed hardwood stand would significantly reduce the stand's value as

wildlife cover in the short term. As stand development progresses the wildlife habitat will improve. See the silviculture description below for details about proposed activities in this stand.

According to the "Wildlife Habitat Feature Tract Summary" this tract has a surplus of both legacy and snag trees in all size categories. The cavity tree category is deficient of maintenance level in all three categories. Because the tract was inventoried during the leaf-on period it is likely that many cavity trees went undetected.

A review of the Natural Heritage Database did not reveal any rare, threatened or endangered species.

Communities
Dry-mesic upland forest composes 44 acres of C13T7. This community is associated with intermediate slopes and soil fertility. Characteristic species include white oak, black oak, scarlet oak, ironwood, and viburnum.

Wet-mesic floodplain forest type covers 37.3 acres and is found along the west and south edges of C13T7 in the Right Drain bottoms. The Right Drain creek bottom was likely cultivated prior to state ownership with the old fields being planted in Virginia pine after state acquisition in 1940. This large pine stand has since deteriorated and reverted to a wet-mesic floodplain type forest. Dominant tree species include sycamore, tulip poplar, sweetgum, and Virginia pine. The herbaceous layer is mostly covered with Japanese stilt grass, an invasive plant.

The Natural Heritage Database did not return in special concern, rare, threatened, or endangered species.

Recreation
There are two main recreational opportunities in this part of Clark State Forest. First there are different parts of a horse trail that lie within the tract and second this area of forest can be used for various hunting purposes.

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 Subdivision Description and Silvicultural Prescription
There are two subdivisions within this tract; there is a mature oak-hickory stand and a mixture of pole and mature mixed hardwoods. Starting with the mature oak-hickory stand, which is located on a drier southwest-facing slope. This stand is in excellent condition with many white oak trees obtaining a diameter in the 20+ inch class. There are also several large chestnut oaks present in this stand. As a whole the stand has 7,894 board feet/acre with around 80% stocking, which

was derived from a Gingrich chart using a basal area of 96.5 ft^2/ac and 82 trees/ac. With this data my recommendation would be to do a light improvement harvest to reduce the stocking to 60%. This would remove approximately 2,000 bd ft/ac. If single-tree selection were implemented, follow-up timber stand improvement would need to be completed to remove some of the regeneration currently present in the understory. The current regeneration strongly favors moving toward a more late successional forest of maple, beech, and ironwood.

The other stand present in this tract is a mixed hardwood stand with a blend of numerous Virginia pine. The stand is dominated by Virginia pine, red maple, sycamore, and sweetgum; all of which are poor quality and form with little value for future management. There are also numerous Virginia pines that have blown over creating conditions that are difficult for deer to move through. Currently the stand has 54.3 trees/acre with a basal area of 42ft^2/acre. These numbers are really low putting the percent stocking around 35%. This will produce an unfavorable forest in the future with few trees of poor quality and form. My recommendation is to clearcut the area with the mixed hardwood/pine while leaving a few seed trees which have good form and height. There were a few yellow-poplar present in the low-lying areas that had a large diameter and excellent form. Leaving these seed sources behind would help to ensure some better regeneration than what is presently there. Over most of the stand, trees of good form are lacking and a total clearcut would be needed.

Due to its size (37 acres), a regeneration harvest in this stand would require residual structure of at least 5% of the total opening area per the Division of Forestry's "Management Guidelines for Compartment-level Wildlife Habitat Features". This can easily be accomplished by buffering the Right Drain.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Single tree selection/regeneration harvest	2010
Timber stand improvement favoring natural regeneration	2012
Stand Inventory	2029

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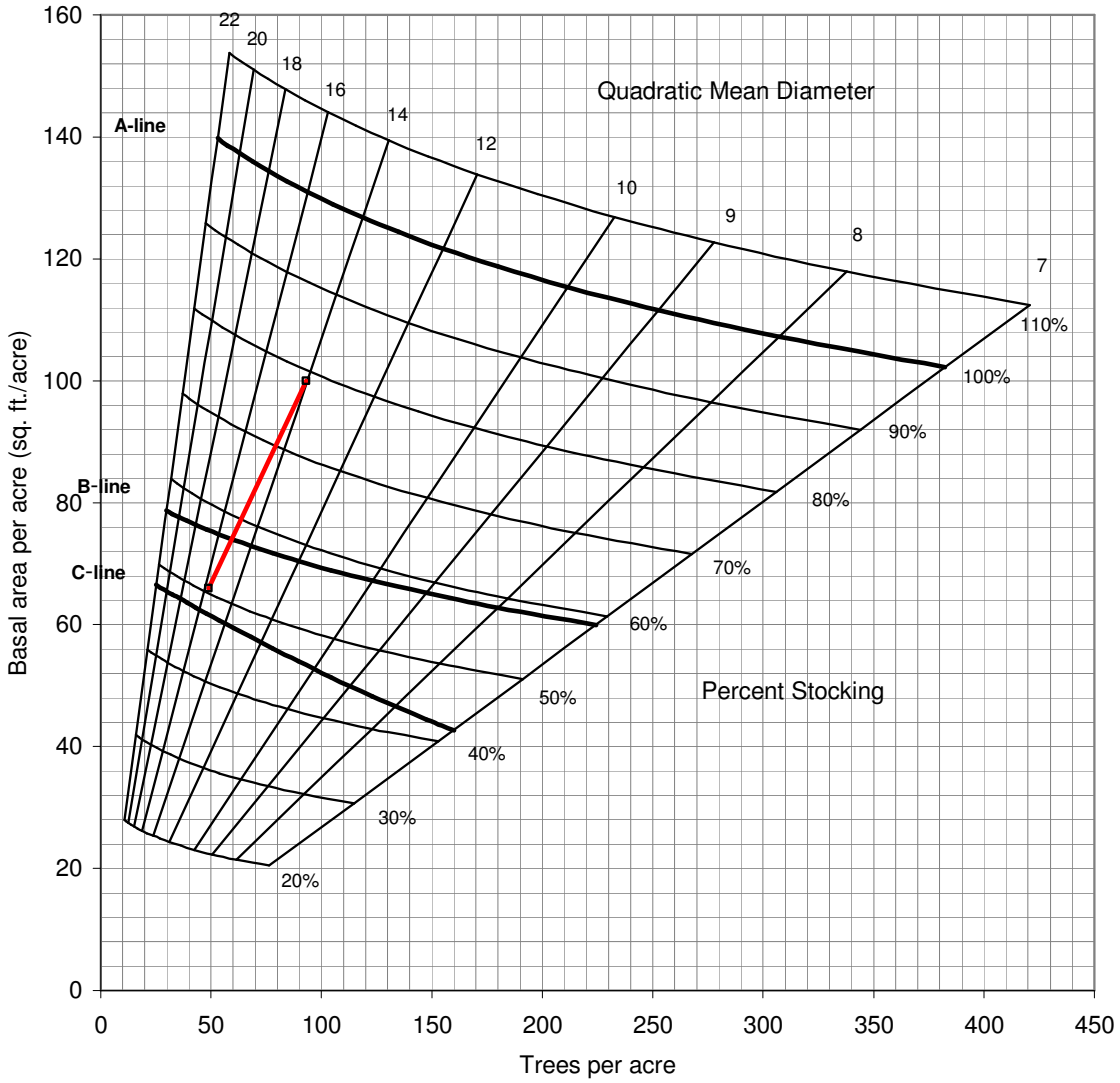
http://www.in.gov/surveytool/public/survey.php?name=dnr_forestry

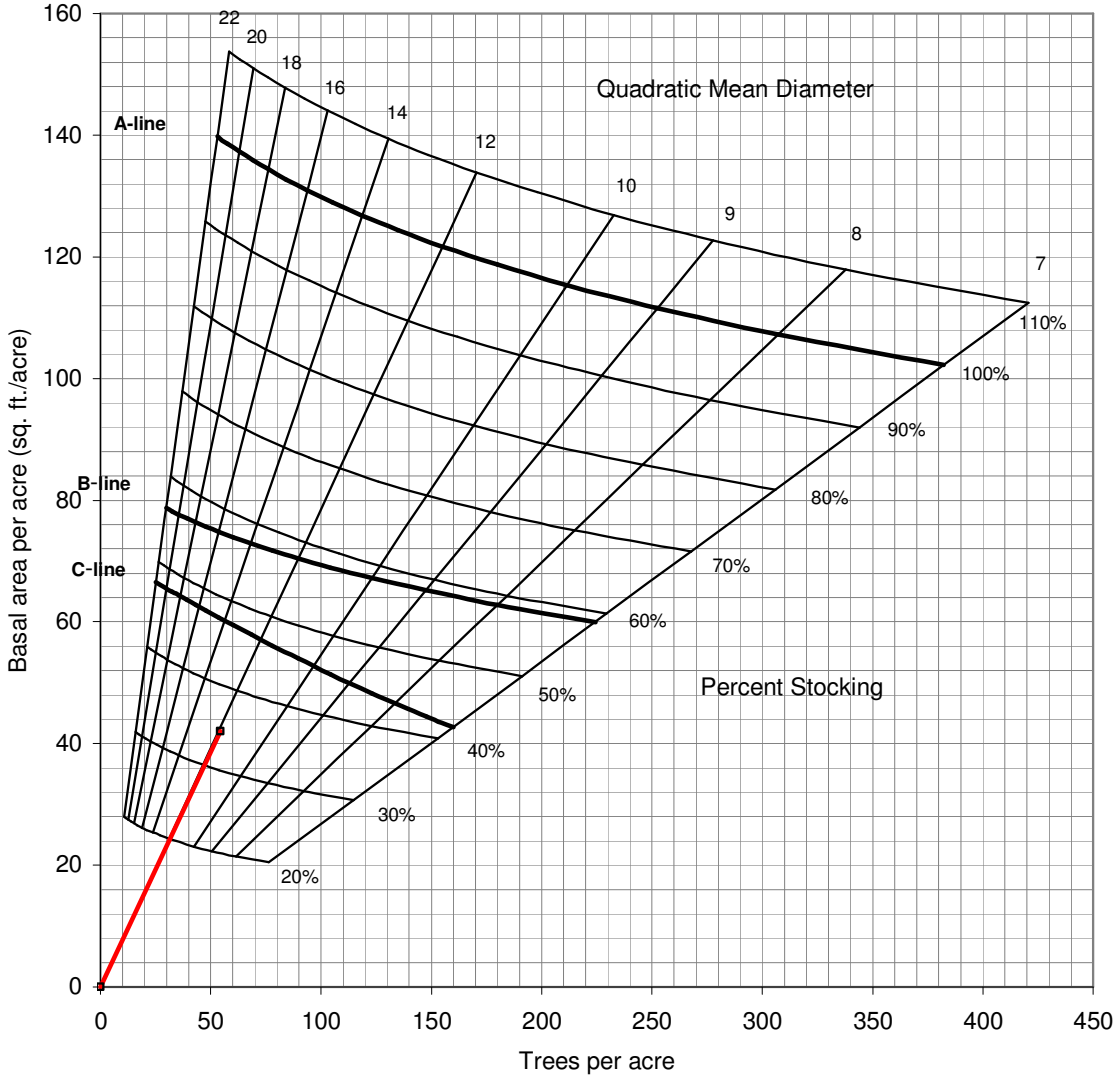
You **must** indicate "Clark C13 T7" in the "Subject or file reference" line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered.

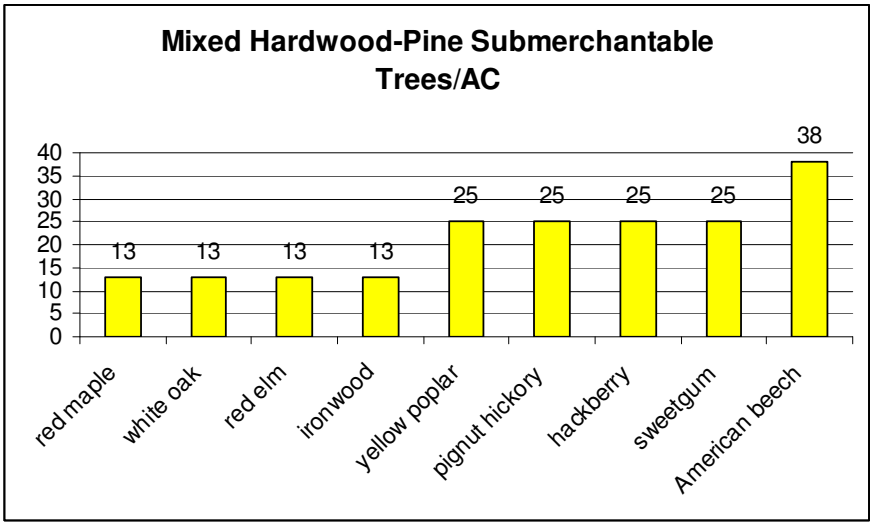
Appendix

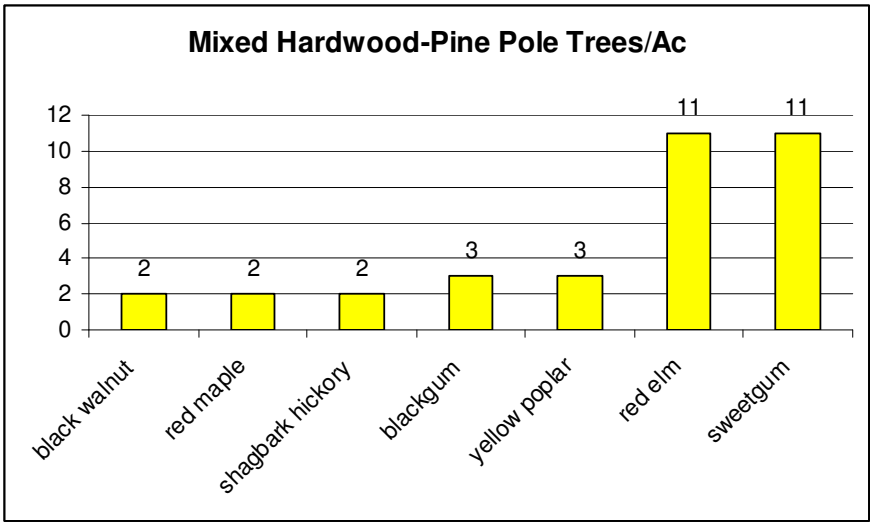
Oak Hickory Stocking Guide

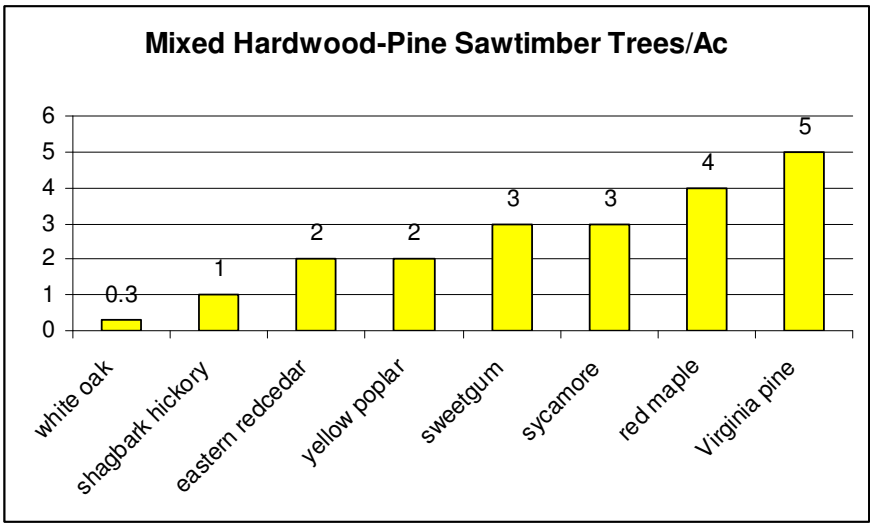


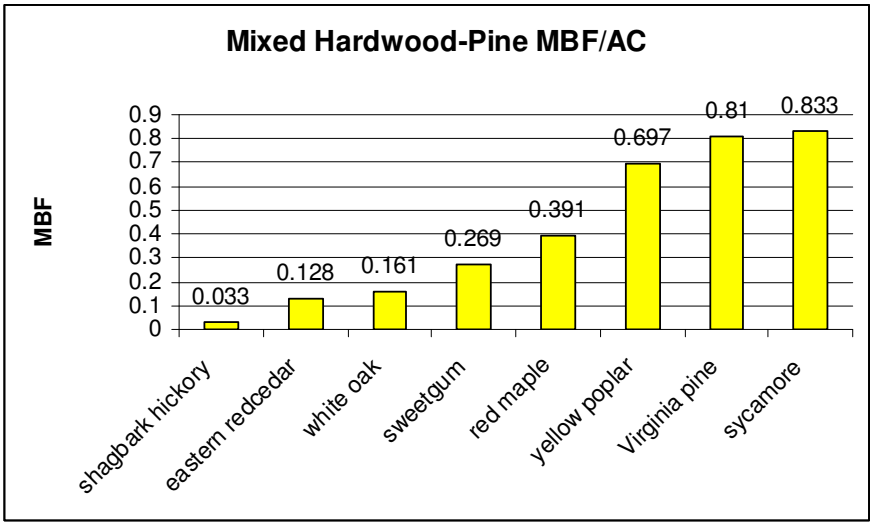
Mixed Hardwood-Pine Stocking Guide

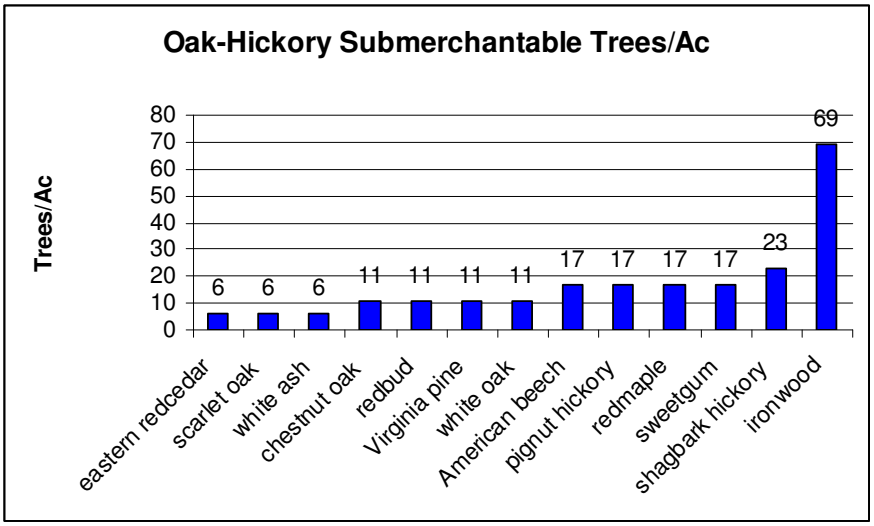


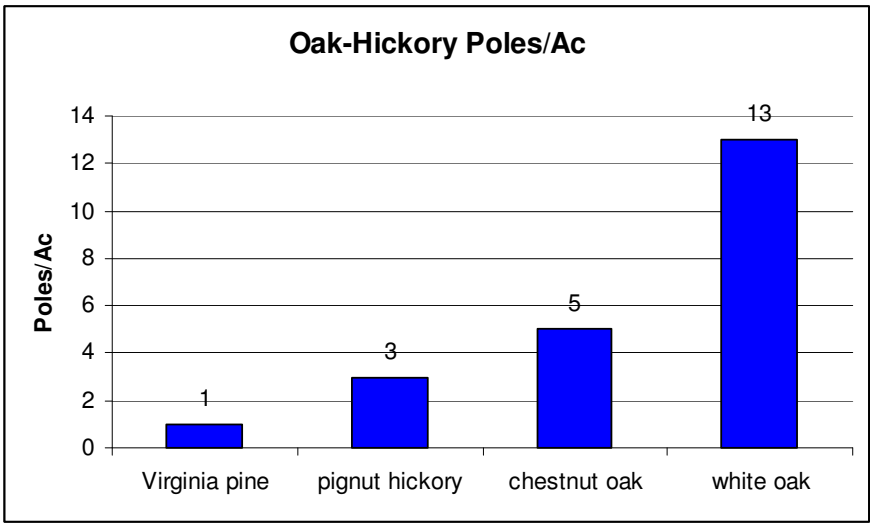

Mixed Hardwood-Pine Submerchantable Trees/AC
40
35
30
25
20
15
10
5
0
13
13
13
13
25
25
25
25
38
red maple
white oak
red elm
ironwood
yellow poplar
pignut hickory
hackberry
sweetgum
American beech

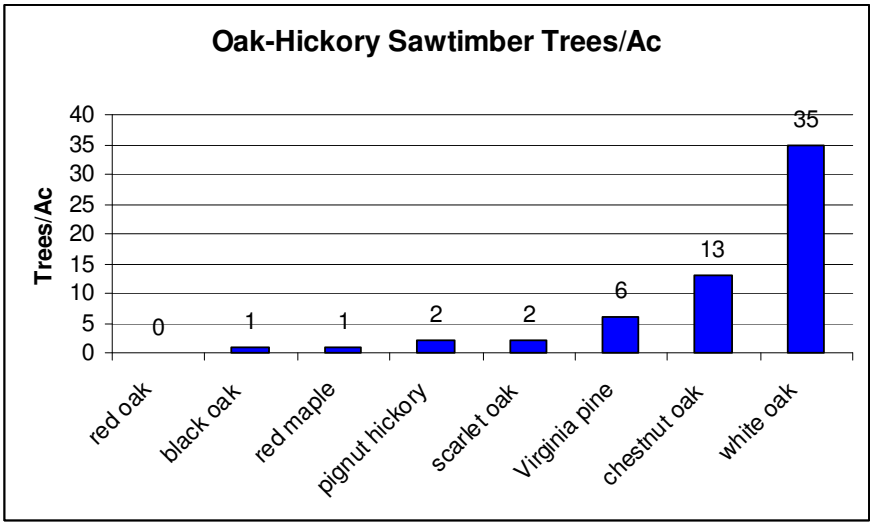

Mixed Hardwood-Pine Pole Trees/Ac
12
10
8
6
4
2
0
2
2
2
3
3
11
11
black walnut
red maple
shagbark hickory
blackgum
yellow poplar
red elm
sweetgum

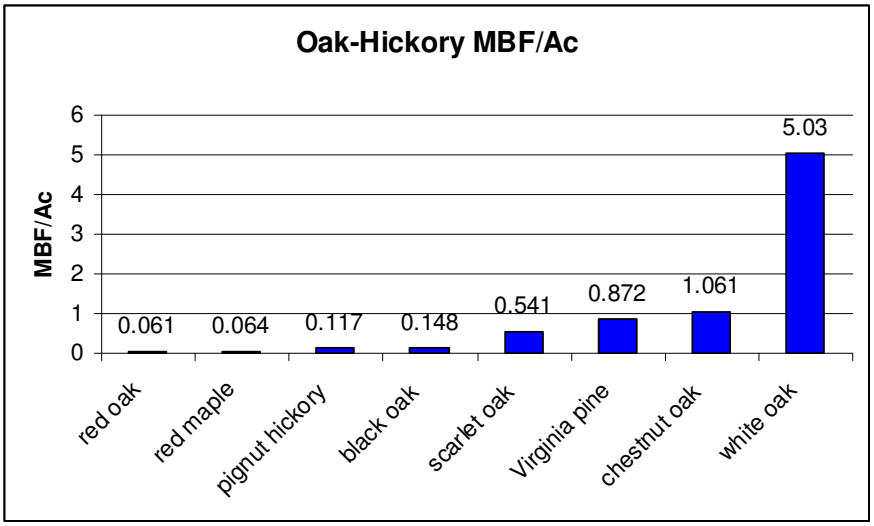

Mixed Hardwood-Pine Sawtimber Trees/Ac
6
5
4
3
2
1
0
0.3
1
2
2
3
3
4
5
white oak
shagbark hickory
eastern redcedar
yellow poplar
sweetgum
sycamore
red maple
Virginia pine


Mixed Hardwood-Pine MBF/AC
MBF
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.033
0.128
0.161
0.269
0.391
0.697
0.81
0.833
shagbark hickory
eastern redcedar
white oak
sweetgum
red maple
yellow poplar
Virginia pine
sycamore


Oak-Hickory Submerchantable Trees/Ac
Trees/Ac
80
70
60
50
40
30
20
10
0
6
6
6
11
11
11
11
17
17
17
17
23
69
eastern redcedar
scarlet oak
white ash
chestnut oak
redbud
Virginia pine
white oak
American beech
pignut hickory
redmaple
sweetgum
shagbark hickory
ironwood


Oak-Hickory Poles/Ac
Poles/Ac
14
12
10
8
6
4
2
0
1
3
5
13
Virginia pine
pignut hickory
chestnut oak
white oak





Soils

BcrAW—Beanblossom silt loam, 1 to 3 percent slopes, occasionally flooded, very brief duration

Setting

Landform: Flood plains
Landform position: Natural levees and alluvial fans

Soil Properties and Qualities

Parent material: Channery, loamy alluvium
Depth class: Deep (40 to 60 inches)
Drainage class: Moderately well drained
Water table depth: 3.5 to 5.0 feet (apparent)
Available water capacity to a depth of 60 inches: About 6.3 inches

Composition

Beanblossom and similar soils: 90 percent
Dissimilar inclusions: 10 percent
* A deep, somewhat poorly drained soil in drainageways
* Beanblossom soils, frequently flooded, on flood plains and alluvial fans

* A moderately deep soil over hard black shale

ComC—Coolville silt loam, 6 to 12 percent slopes
Setting
Landform: Hills underlain with shale or siltstone
Landform position: Shoulders and backslopes
Soil Properties and Qualities
Parent material: Thin loess and clayey residuum
Depth class: Deep (40 to 60 inches)
Drainage class: Moderately well drained
Water table depth: 1 to 2 feet (perched)
Available water capacity to a depth of 60 inches: About 6.6 inches
Composition
Coolville and similar soils: 86 percent
Dissimilar inclusions: 14 percent
* Coolville soils, severely eroded on shoulders and the upper part of backslopes
* Rarden soils on backslopes
* Weddel soils on summits
* Stonehead soils on summits
* Stendal soils on toeslopes

ConD—Coolville-Rarden complex, 12 to 18 percent slopes
Setting
Landform: Hills underlain with shale or siltstone
Landform position: Shoulders and backslopes
Soil Properties and Qualities
Coolville
Parent material: Thin loess and clayey residuum
Depth class: Deep (40 to 60 inches)
Drainage class: Moderately well drained
Water table depth: 1 to 2 feet (perched)
Available water capacity to a depth of 60 inches: About 6.5 inches
Rarden
Parent material: Clayey residuum
Depth class: Moderately deep (20 to 40 inches)
Drainage class: Moderately well drained
Water table depth: 1 to 2 feet (perched)
Available water capacity to a depth of 60 inches: About 4.7 inches

DbrG—Deam silty clay loam, 20 to 55 percent slopes
Setting
Landform: Hills underlain with shale
Landform position: Backslopes
Soil Properties and Qualities
Parent material: Clayey residuum
Depth class: Moderately deep (20 to 40 inches)
Drainage class: Well drained
Available water capacity to a depth of 60 inches: About 4.3 inches
Composition
Deam and similar soils: 94 percent
Dissimilar inclusions: 6 percent
* Rarden soils on shoulders and summits
* Kurtz soils in areas on the upper part of backslopes

GmaG—Gnawbone-Kurtz silt loams, 20 to 60 percent slopes

Setting
Landform: Hills underlain with siltstone
Landform position: Backslopes
Soil Properties and Qualities
Gnawbone
Parent material: Silty residuum
Depth class: Moderately deep (20 to 40 inches)
Drainage class: Well drained
Available water capacity to a depth of 60 inches: About 6.0 inches
Kurtz
Parent material: Silty residuum
Depth class: Deep (40 to 60 inches)
Drainage class: Well drained
Available water capacity to a depth of 60 inches: About 7.1 inches
Composition
Gnawbone and similar soils: 48 percent
Kurtz and similar soils: 32 percent
Dissimilar inclusions: 20 percent
* Coolville soils on shoulders and summits
* Wellrock soils on shoulders and summits
* Beanblossom soils on flood plains
* Stonehead soils on shoulders and summits
* A very deep, well drained soil formed in colluvium on footslopes

StaAW—Steff silt loam, 0 to 2 percent slopes, occasionally flooded, very brief duration
Setting
Landform: Flood plains
Landform position: Flood plain steps
Soil Properties and Qualities
Parent material: Acid, silty alluvium
Depth class: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Water table depth: 1.5 to 2.5 feet (apparent)
Available water capacity to a depth of 60 inches: About 10.3 inches
Composition
Steff and similar soils: 86 percent
Dissimilar inclusions: 14 percent
* Stendal soils in drainageways
* Cuba soils on natural levees
* Steff soils, occasionally flooded intermixed throughout the unit

WedB2—Weddel silt loam, 2 to 6 percent slopes, eroded
Setting
Landform: Dissected till plains
Landform position: Summits
Soil Properties and Qualities
Parent material: Loess, a paleosol in till and residuum from shale
Depth class: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Water table depth: 1.5 to 3.0 feet (perched)
Available water capacity to a depth of 60 inches: About 7.9 inches
Composition
Weddel and similar soils: 95 percent
Dissimilar inclusions: 5 percent
* Coolville soils on summits and intermixed throughout the unit

Clark State Forest
C13T7