

**A Survey of the Flora and Plant
Communities of Steele Creek Park**

by Anna Hess

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Summary

This survey of the forest communities and flora was used to update the list of flora of Steele Creek Park which can be found in Appendix A. 50' by 50' quadrants were marked off in each of the six habitat types: alluvial hollows, ridges, slopes, coniferous areas, lakeside areas, and early succession forests/ meadows. In each quadrant, the diameter at breast height of the trees was used to determine stage of forest succession while the most common species of overcanopy trees were used to determine forest type. Furthermore, herbaceous species within each plot were identified. The procedure used in this study to inventory trees and herbaceous species within their communities can be used in the future to inventory more regions of the park and gain a more complete understanding of the flora of the park.

Introduction

Steele Creek Park is a park owned by the City of Bristol, Tennessee, and contains 2,196 acres of land, most of which is forested. In addition to the forested areas, the park contains a 52 acre lake and 138 acres of recreational area which were not studied in this inventory. The forested area of the park is divided into two areas: the 1,267 acre Slagle Hollow Natural Area southwest of the lake and the 740 acre Trinkle Hollow Boundary Area to the northeast of the lake (Rowell, Development Plan, 21 - 22.)

Cove-hardwood forests, which are the dominant type of plant community in this area, are made up of a mixture of mostly deciduous species. The species composition of a particular mixed deciduous forest is determined by factors such as climate, topography, proximity of water, and richness of the soil. Dominant species, those which make up the overstory of the forest, in such a forest type include basswoods, Tulip-tree, Yellow Buckeye, Mountain Silverbell, Eastern Hemlock, White Ash, Sugar Maple, Yellow Birch, Beech, Northern Red Oak, Black Cherry, Cucumber Tree, and several other species. The understory (which consists of the midcanopy and shrub levels) may contain dogwoods, Witch-hazel, Red Maple, Sassafras, and Serviceberry as well as seedlings of the dominant species (Sutton & Sutton, 83 - 84.) Many of these species can be found within the forested areas of Steele Creek Park.

Slagle Hollow Natural Area and Trinkle Hollow Boundary Area consist of forested hills surrounding alluvial hollows. Six distinct habitat types may be found in these areas. Dry ridgetops with somewhat sandy, dry soil slowly merge with the slope habitat which extends from the ridges to the alluvial hollows. Alluvial hollows are the areas between the hills which usually contain a creek and catch the rich soil which runs off the hills to either side. Coniferous areas only exist in small pockets within the park and mostly consist of White Pine with some Red Cedars and Virginia Pines. In the lakeside areas, the moist soil promotes growth of species such as Ironwood and Hornbeam. Very few areas of the park are early successional forest or meadows, but at least one area of this type does exist in Trinkle Hollow Boundary Area.

The forested areas of the park were logged before they were acquired by the City of Bristol, Tennessee. Records are scarce, but the Slagle Hollow area appears to have been logged in the 1940's (Rowell, Development Plan, 44.) The selective cutting resulted in different stages of succession throughout the park.

The stage of succession of a forest can be determined using a size-class bar graph in which the diameter at breast height (dbh) is graphed against the number of trees with that dbh. Late successional forests typically have fewer trees with very small or very large dbh's than those with a medium dbh, and the graph of such a forest takes on the shape of an inverted parabola with a peak at a medium dbh (Figure 12.) Early successional forests, in contrast, have a large quantity of young trees with small dbh's and the graph of the forest looks like a line running from a large number of individuals at very low dbh's to very few or no individuals at large dbh's (Figure 10.) An early successional forest can result from logging or a fire in which all of the old trees are

destroyed. Mid-successional forests make up most of Steele Creek Park and the graph of such a forest can be variable (Figure 11.) Furthermore, as is the case in many parts of the park, a disturbance event such as selective logging or the fall of large tree can change the appearance of the size-class bar graph of a late successional forest. Rather than the inverted parabola described above, such a forest will have a dip which corresponds to the disturbance event somewhere within the parabola (Figure 13) (Jones, Spring 1996.)

Materials and Methods

A topographical map of the park with a scale of 1 inch of map to 1000 feet of land was obtained and a coordinate system was set up on the map with the origin at the beachhouse and the Y axis pointing north (Appendix B.) Coniferous areas, creeks, and trails were marked on the map from arial photographs of the park and from other topographical maps of the park. Two sites of each habitat type were picked, one in Slagle Hollow Natural Area and one in Trinkle Hollow Boundary Area. (In the Trinkle Hollow Boundary Area, the lakeside quadrant was replaced by a meadow quadrant as meadows are not known to exist within the Slagle Hollow Natural Area and most of the lakeside habitat of Trinkle Hollow Boundary Area is unforested and has heavy human traffic.) The sites were given quadrant numbers by using the map as a coordinate system. Finally, each site was surveyed in the manner outlined below to determine the flora of each site.

At the site, a 50 foot by 50 foot square was marked off using plastic and wooden stakes to mark the corners. One stake at the site was marked with the coordinates of the site. Percentage of groundcover, percentage of ground area exposed to direct light, slope of the ground, and the presence or absence of human traffic, trails, and creeks were estimated. The direction the slope was facing was determined using a compass. Then the quadrant was surveyed and every tree which reached shoulder height or higher was identified using A Field Guide to Eastern Trees (Petrides, 1988) and A Field Guide to Trees and Shrubs (Petrides, 1972.) Each tree was measured in centimeters to find circumference at breast height and was listed as overstory, midcanopy, or shrub. The circumference was then converted to diameter at breast height (dbh) by dividing the circumference by pi. Herbaceous species were identified using A Field Guide to Wildflowers (Peterson & McKenny, 1968) and A Field Guide to the Ferns (Cobb, 1963.) The presence or absence of a bloom was noted and each flower was listed as Common (several individuals found in some part of the plot,) Found Throughout (occurring throughout the plot,) or Isolated Individual. Individuals which were difficult to identify were taken back to the Nature Center and keyed out using Manual of the Vascular Flora of the Carolinas (Radford, Ahles, & Bell, 1968.) The Forest Type was determined by the most dominant overcanopy trees.

A size-class bar graph was constructed for each site in which the diameter at breast height (cm) of the trees in the plot was graphed against the number of individuals which had attained that dbh. The size-class bar graph was examined and used to determine stage of succession and the possibility of some disturbance event in the quadrant's past. Appendix C gives an overview of the methods used to determine stage of succession from the size-class bar graphs.

Finally, the natural history inventories completed by Joseph Jackson, Brent Rowell, and Louise Hopson Howard were compiled into a list of the flora occurring within the park to which new species found in this study were added (Appendix A.)

Results

Date: 7/18/97 Quadrant #: -17.2, -2.9 Location: Slagle Hollow
 Habitat Type: alluvial hollow Forest Type: Cove-hardwood
 Percentage of Groundcover: 80% Percent of ground area exposed to direct light: 10%
 Slope of Ground: 5 Direction Slope is facing: South
 Does a creek run through the quadrant? Yes
 Any human traffic? Yes Does a trail run through the quadrant? Yes

Tree Species:

Dominant trees in each story:

Overstory: Beech/ Tulip-tree/ Sycamore

Midcanopy: Beech

Shrubs: Beech/ Sassafras

<u>Species</u>	<u># of Individuals</u>
Beech (<i>Fagus grandifolia</i>)	60
Red Maple (<i>Acer rubrum</i>)	6
Sassafras (<i>Sassafras albidum</i>)	5
Sugar Maple (<i>Acer saccharum</i>)	3
Flowering Dogwood (<i>Cornus florida</i>)	2
Yellow Buckeye (<i>Aesculus octandra</i>)	2
Tulip-tree (<i>Liriodendron tulipifera</i>)	2
Pale Hickory (<i>Carya pallida</i>)	2
Common Witch-hazel (<i>Hamamelis virginiana</i>)	1
Wild Hydrangea (<i>Hydrangea arborescens</i>)	1
Red Mulberry (<i>Morus rubra</i>)	1
? Rose (<i>Rosa</i> sp.)	1
Sycamore (<i>Platanus occidentalis</i>)	1

Herbaceous Species:

<u>Species found Throughout the plot:</u>	<u>Blooming?</u>
Christmas Fern (<i>Polystichum acrostichoides</i>)	N
Stinging Nettle (<i>Urtica dioica</i>)	Y
May Apple (<i>Podophyllum peltatum</i>)	N
Wild Geranium (<i>Geranium maculatum</i>)	N
Hog-peanut (<i>Amphicarpa bracteata</i>)	N

<u>Species Common in some part of the plot:</u>	<u>Blooming?</u>
Jack-in-the-Pulpit (<i>Arisaema triphyllum</i>)	N
Little Brown Jug (<i>Asarum arifolium</i>)	N
Wild Stonecrop (<i>Sedum ternatum</i>)	N
? Violet (<i>Viola</i> sp.)	N

<u>Individuals found within the plot:</u>	<u>Blooming?</u>
Black Cohosh (<i>Cimicifuga racemosa</i>)	N
Tall Bellflower (<i>Campanula americana</i>)	Y
Solomon's Seal (<i>Polygonatum biflorum</i>)	N

Forest Succession Information:

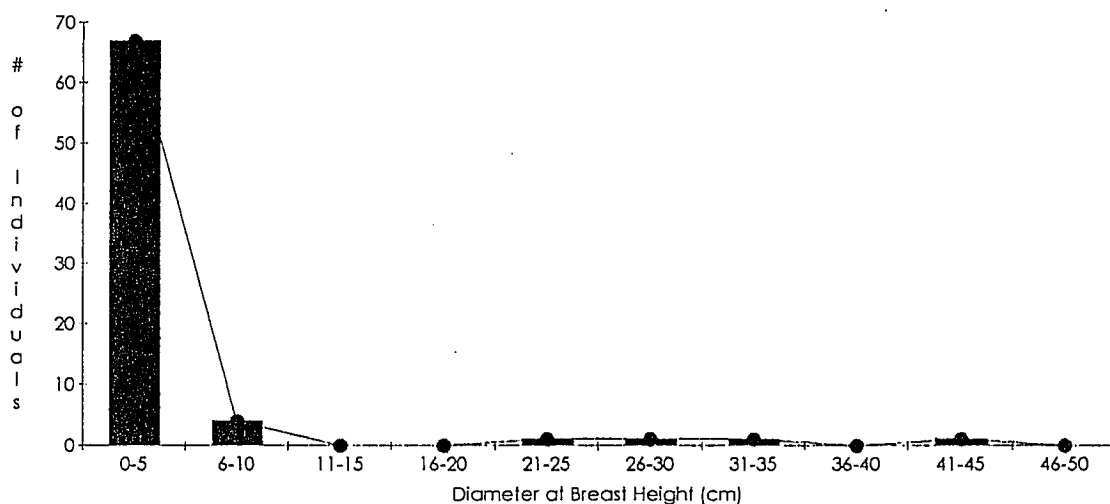


Figure 1: Tree Diameters in Quadrant -17.2, -2.9 Slagle Hollow, alluvial hollow habitat.

This plot was surveyed by Anna Hess and Jennifer Ragan.

Explanation:

This quadrant is typical of cove-hardwood forests in our region. The large quantity of Sassafras in the shrub layer, the rich herbaceous growth, and the presence of a Sycamore in the overstory is due to the moist soil beside the creek.

The size-class bar graph for this site had a preponderance of small dbh's, suggesting an early-successional forest. However, due to the large dbh's (23 - 64 cm) of the trees which make up the overstory, we can conclude that the large quantity of small trees is more likely to be a result of the moist habitat, rich soil which has built up along the creek, and the small break in the canopy due to the creek running through the quadrant. This explanation is supported by the large percentage of groundcover since the same features which would allow such a large shrub layer in a mid-successional forest also maintain rich herbaceous growth. The dip in Figure 1 between dbh's of 11 and 20 cm suggests a disturbance event.

Date: 8/20/97 Quadrant #: -14.6, -2.9 Location: Trinkle Hollow
 Habitat Type: alluvial hollow Forest Type: Cove-hardwood
 % Groundcover: 70% Slope of Ground: 5
 Direction Slope is facing: Northeast
 Does a creek run through the quadrant? Yes Any human traffic? No
 Does a trail run through the quadrant? No, but there is a very seldom used trail just above the quadrant.

Tree Species:Dominant trees in each story:

Overstory: Tulip-tree

Midcanopy: Sugar Maple/ Common Witch-hazel

Shrubs: Sugar Maple/ Common Spicebush

<u>Species</u>	<u># of Individuals</u>
Sugar Maple (<i>Acer saccharum</i>)	59
Common Spicebush (<i>Lindera benzoin</i> var. <i>benzoin</i>)	23
Common Witch-hazel (<i>Hamamelis virginiana</i>)	11
Red Maple (<i>Acer rubrum</i>)	8
Tulip-tree (<i>Liriodendron tulipifera</i>)	5
White Ash (<i>Fraxinus americana</i>)	5
Shagbark Hickory (<i>Carya ovata</i>)	4
Ironwood (<i>Carpinus caroliniana</i>)	3
Slippery Elm (<i>Ulmus rubra</i>)	2

Seedlings:

Common Witch-hazel (*Hamamelis virginiana*)
 Northern Red Oak (*Quercus rubra* var. *borealis*)
 Red Maple (*Acer rubrum*)
 White Ash (*Fraxinus americana*)
 Common Spicebush (*Lindera benzoin* var. *benzoin*)
 Sugar Maple (*Acer saccharum*)
 Ironwood (*Carpinus caroliniana*)
 Slippery Elm (*Ulmus rubra*)
 Wild Hydrangea (*Hydrangea arborescens*)

Herbaceous Species:

<u>Species found Throughout the plot:</u>	<u>Blooming?</u>
False Solomon's Seal (<i>Smilacina racemosa</i>)	N
Wild Yam (<i>Dioscorea quaternata</i>)	N
Bedstraw (<i>Galium</i> sp.)	N
Jack-in-the-Pulpit (<i>Arisaema triphyllum</i>)	N
White Avens (<i>Geum canadense</i>)	N

<u>Species found Throughout the plot (cont.):</u>	<u>Blooming?</u>
Hog-peanut (<i>Amphicarpa bracteata</i>)	N
Leathery Grape Fern (<i>Botrychium multifidum</i>)	N
Rattlesnake Fern (<i>Botrychium virginianum</i>)	N
Christmas Fern (<i>Polystichum acrostichoides</i>)	N
Virginia Creeper (<i>Parthenocissus quinquefolia</i>)	N
Sensitive Fern (<i>Onoclea sensibilis</i>)	N
Yellow Mandarin (<i>Disporum lanuginosum</i>)	N
Wild Geranium (<i>Geranium maculatum</i>)	N

<u>Species Common in some part of the plot:</u>	<u>Blooming?</u>
Twisted-stalk (<i>Streptopus amplexifolius</i>)	N
Bullbrier Greenbrier (<i>Smilax bona-nox</i>)	N
?Northern Honeysuckle (<i>Lonicera villosa</i>)	N (see notes)
Downy Rattlesnake Plantain (<i>Goodyera pubescens</i>)	N
White Clintonia (<i>Clintonia umbellulata</i>)	N

<u>Individuals found within the plot:</u>	<u>Blooming?</u>
Solomon's Seal (<i>Polygonatum biflorum</i>)	N
Crane-fly Orchid (<i>Tipularia discolor</i>)	Y

Notes:

I was unable to determine the percentage of ground area exposed to direct light since it was overcast.

I was uncertain of the identification of the honeysuckle species since the plant was young and Northern Honeysuckle should not be present in this region.

Forest Succession Information:

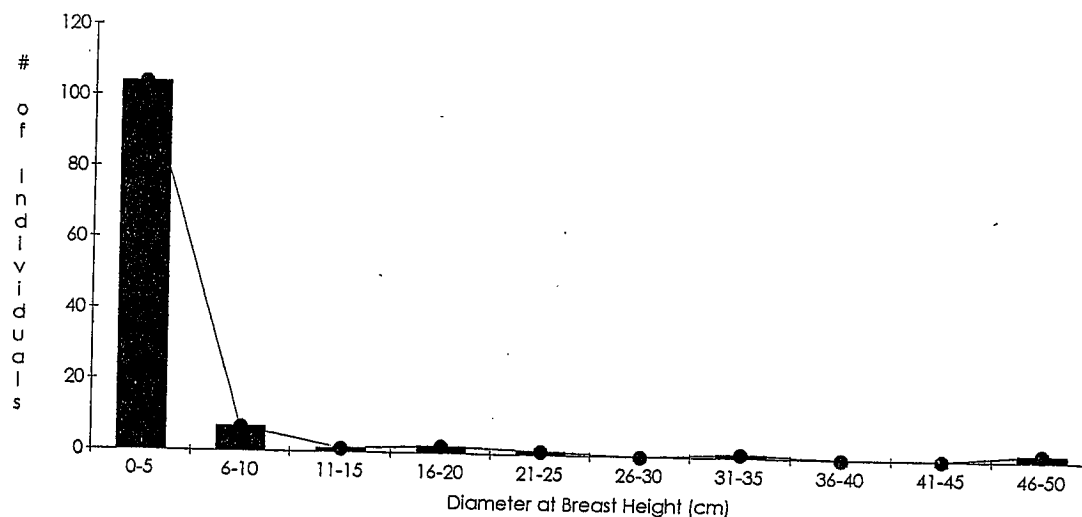


Figure 2: Tree Diameters in Quadrant -14.6, -2.9 Trinkle Hollow, alluvial hollow habitat

Note: In addition to the dbh's graphed in Figure 2, there were dbh's of 52 and 53 cm which did not fit on the chart and would not have changed the graph appreciably.

This plot was surveyed by Anna Hess.

Explanation:

The species found in this quadrant are even more typical of wet soil than those in the Slagle Hollow alluvial hollow quadrant (-14.6, -2.9.) Tulip-tree often grows in moist soil, as do Common Witch-hazel and several of the herbaceous plants such as Sensitive Fern. However, the quadrant is still a cove-hardwood forest.

Like Figure 1, Figure 2 is very similar to the graph of the diameters of trees in an early successional forest. However, the same arguments apply (see Explanation for Quadrant -14.6, -2.9.)

Date: 7/21/97 Quadrant #: -2.0, -1.6 Location: Slagle Hollow
 Habitat Type: slope
 Forest Type: Cove-hardwood
 Percentage of Groundcover: 20% Percent of ground area exposed to direct light: 5%
 Slope of Ground: 45 Direction Slope is facing: North
 Does a creek run through the quadrant? No
 Any human traffic? No Does a trail run through the quadrant? No

Tree Species:

Dominant trees in each story:

Overstory: Shagbark Hickory/ Sugar Maple
 Midcanopy: Sugar Maple/ Flowering Dogwood
 Shrubs: Sugar Maple/ Shagbark Hickory

<u>Species</u>	<u># of Individuals</u>
Sugar Maple (<i>Acer saccharum</i>)	15
Shagbark Hickory (<i>Carya ovata</i>)	6
Flowering Dogwood (<i>Cornus florida</i>)	4
Red Maple (<i>Acer rubrum</i>)	3
Yellow Birch (<i>Betula alleghaniensis</i>)	2
Ironwood (<i>Carpinus caroliniana</i>)	2
White Pine (<i>Pinus strobus</i>)	1
Mapleleaf Viburnum (<i>Viburnum acerifolium</i>)	1
American Elm (<i>Ulmus americana</i>)	1
Smooth Azalea (<i>Rhododendron arborescens</i>)	1
Yellow Buckeye (<i>Aesculus octandra</i>)	1
Common Witch-hazel (<i>Hamamelis virginiana</i>)	1

Seedlings:

Sugar Maple (*Acer saccharum*)
 Mapleleaf Viburnum (*Viburnum acerifolium*)
 Wild Hydrangea (*Hydrangea arborescens*)
 Chestnut Oak (*Quercus prinus*)
 Common Witch-hazel (*Hamamelis virginiana*)
 American Elm (*Ulmus americana*)

Herbaceous Species:

<u>Species found Throughout the plot:</u>	<u>Blooming?</u>
Christmas Fern (<i>Polystichum acrostichoides</i>)	N
Ebony Spleenwort (<i>Asplenium platyneuron</i>)	N
Poison Ivy (<i>Rhus radicans</i>)	N
Wild Yam (<i>Dioscorea quaternata</i>)	N
Virginia Creeper (<i>Parthenocissus quinquefolia</i>)	N

<u>Species found Throughout the plot (cont.):</u>	<u>Blooming?</u>
Sedge (<i>Carex</i> sp.)	Y
Greenbrier (<i>Smilax</i> sp.)	N
Solomon's Seal (<i>Polygonatum biflorum</i>)	N
False Solomon's Seal (<i>Smilacina racemosa</i>)	N
Bedstraw (<i>Galium</i> sp.)	N
Rue Anemone (<i>Anemonella thalictroides</i>)	N
Wild Stonecrop (<i>Sedum ternatum</i>)	N
Bloodroot (<i>Sanguinaria canadensis</i>)	N
Maidenhair Fern (<i>Adiantum pedatum</i>)	N
Black Cohosh (<i>Cimicifuga racemosa</i>)	N
Squawroot (<i>Conopholis americana</i>)	N

<u>Species Common in some part of the plot:</u>	<u>Blooming?</u>
Lettuce (<i>Lactuca</i> sp.)	N
Frost Grape (<i>Vitis vulpina</i>)	N

<u>Individuals found within the plot:</u>	<u>Blooming?</u>
Laurel Greenbrier (<i>Smilax laurifolia</i>)	N
Jack-in-the-Pulpit (<i>Arisaema triphyllum</i>)	N
Cat Grape (<i>Vitis palmata</i>)	N

Notes:

A large fallen tree was near the bottom of the quadrant. The ground on the slope below the log was bare and contained dozens of small mammal holes.

The plant life changed between the top and bottom of the slope in the quadrant. Lower, there was a larger percentage of groundcover.

Forest Succession Information:

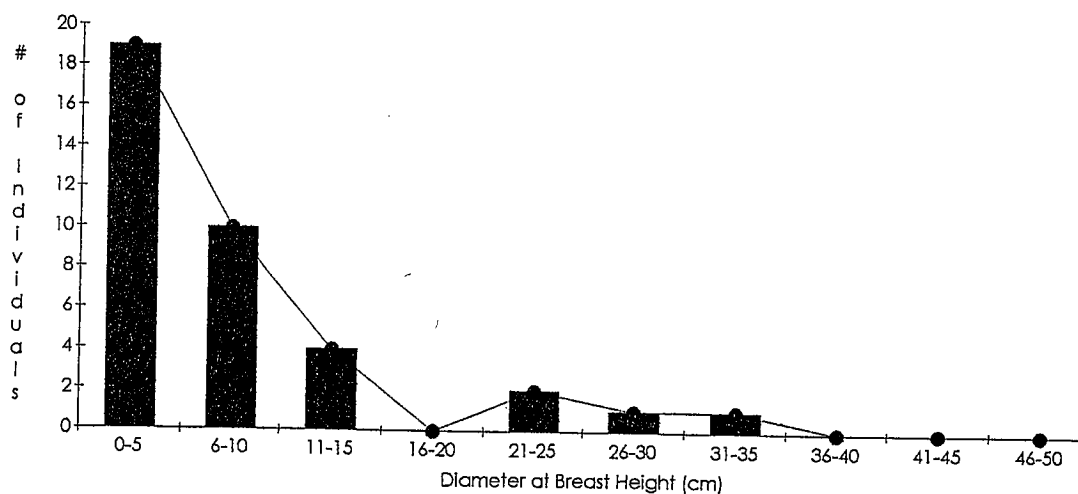


Figure 3: Tree Diameters in Quadrant -2.0, -1.6 Slagle Hollow, slope habitat.

Note: In addition to the dbh's graphed in Figure 3, there was a tree with a dbh of 63 cm which did not fit on the chart and would not have changed the graph appreciably.

This plot was surveyed by Anna Hess.

Explanation:

Shagbark Hickory and Sugar Maple are the major overstory species in this quadrant because the plot is on a north-facing hillside and both species prefer moist soil. Shagbark Hickory grows in mixed hardwood forests while Sugar Maple will either grow in such groupings or in pure stands as can be seen in parts of the Trinkle Hollow Area. In addition to young Sugar Maples and Shagbark Hickories, Flowering Dogwood forms part of the understory as it does in many mixed deciduous forests. As the quadrant nears the lake at the bottom of the plot, the more moisture in the soil results in a larger percentage of groundcover.

The graph fits that of a mid-successional forest although the dip at dbh's of 16 - 20 cm suggests a major disturbance event.

Date: 8/17/97 Quadrant #: 9.0, -0.5 Location: Trinkle Hollow
 Habitat Type: slope Forest Type: Cove-hardwood
 % Groundcover: 20% Percent of ground area exposed to direct light: 5%
 Slope of Ground: 20 Direction Slope is facing: North
 Does a creek run through the quadrant? No
 Any human traffic? No Does a trail run through the quadrant? No

Tree Species:

Dominant trees in each story:

Overstory: Sycamore/ Red Maple/ Box Elder/ Sugar Maple

Midcanopy: Flowering Dogwood/ Black Cherry

Shrubs: Common Spicebush

<u>Species</u>	<u># of Individuals</u>
Common Spicebush (<i>Lindera benzoin</i> var. <i>benzoin</i>)	10
Black Cherry (<i>Prunus serotina</i>)	6
Flowering Dogwood (<i>Cornus florida</i>)	5
Yellow Buckeye (<i>Aesculus octandra</i>)	3
Sugar Maple (<i>Acer saccharum</i>)	3
Common Privet (<i>Ligustrum vulgare</i>)	3
Box Elder (<i>Acer negundo</i>)	2
Chinese Matrimony-vine (<i>Lycium chinense</i>)	2
Sycamore (<i>Platanus occidentalis</i>)	1
Red Maple (<i>Acer rubrum</i>)	1
Bitternut Hickory (<i>Carya cordiformis</i>)	1
Beech (<i>Fagus grandifolia</i>)	1

Seedlings:

Chinese Matrimony-vine (*Lycium chinense*)

Common Privet (*Ligustrum vulgare*)

Sugar Maple (*Acer saccharum*)

Common Spicebush (*Lindera benzoin* var. *benzoin*)

American Elm (*Ulmus americana*)

Common Elderberry (*Sambucus canadensis*)

Yellow Buckeye (*Aesculus octandra*)

Herbaceous Species:

<u>Species found Throughout the plot:</u>	<u>Blooming?</u>
Virginia Creeper (<i>Parthenocissus quinquefolia</i>)	N
Violet (<i>Viola</i> sp.)	N
Twisted-stalk (<i>Streptopus amplexifolius</i>)	N
Japanese Honeysuckle (<i>Lonicera japonica</i>)	N
Poison Ivy (<i>Rhus radicans</i>)	N

<u>Species found Throughout the plot (cont.):</u>	<u>Blooming?</u>
White Avens (<i>Geum canadense</i>)	N
? Rose (<i>Rosa</i> sp.)	N

<u>Species Common in some part of the plot:</u>	<u>Blooming?</u>
False Solomon's Seal (<i>Smilacina racemosa</i>)	N
Bloodroot (<i>Sanguinaria canadensis</i>)	N
Bullbrier Greenbrier (<i>Smilax bona-nox</i>)	N
Stinging Nettle (<i>Urtica dioica</i>)	N
Wild Geranium (<i>Geranium maculatum</i>)	N
? Grass	N

<u>Individuals found within the plot:</u>	<u>Blooming?</u>
Riverbank Grape (<i>Vitis riparia</i>)	N

Notes:

The plot is near the boundary of the park, so much of the undergrowth was made up of aggressive exotics such as Common Privet and Chinese Matrimony-vine.

Forest Succession Information:

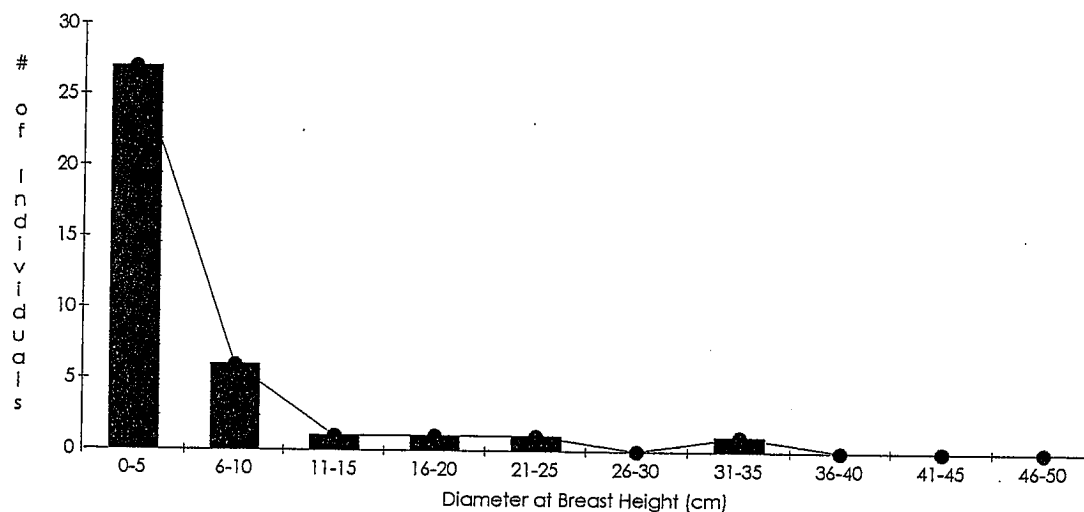


Figure 4: Tree Diameters in Quadrant 9.0, -0.5 Trinkle Hollow, slope habitat

Note: In addition to the dbh's graphed in Figure 4, there was a tree with a dbh of 72 cm which did not fit on the chart and would not have changed the graph appreciably.

This plot was surveyed by Anna Hess.

Explanation:

The dominant species in each story are typical of a moist habitat. The upper canopy covers less of the quadrant than is typical, resulting in a large amount of shrubby undergrowth. The dip in Figure 4 at dbh's of 26 - 30 cm is probably due to selective logging as no trees appear to have fallen in the quadrant recently.

The abundance of exotic shrub species (Common Privet and Chinese Matrimony-vine) which send up several shoots from a single rootstock explains the large quantity of individuals with small dbh's. This abundance of shrubby exotics is worrisome as this quadrant is much nearer the boundary of the park than the other slope quadrant. Privet is already widespread within the park, but Chinese Matrimony-vine may be limited to the edges of the park.

Date: 7/24/97 Quadrant #: -3.0, -4.5 Location: Slagle Hollow
 Habitat Type: ridge Forest Type: Oak/ hickory Association
 Percentage of Groundcover: 70% Percent of ground area exposed to direct light: 5%
 Slope of Ground: 25 Direction Slope is facing: Northeast
 Does a creek run through the quadrant? No
 Any human traffic? Yes Does a trail run through the quadrant? Yes

Tree Species:

Dominant trees in each story:

Overstory: Chestnut Oak/ Bitternut Hickory/ Pignut Hickory/ Northern Red Oak

Midcanopy: Red Maple/ Flowering Dogwood/ White Ash

Shrubs: Red Maple/ Black Cherry

<u>Species</u>	<u># of Individuals</u>
Red Maple (<i>Acer rubrum</i>)	11
Flowering Dogwood (<i>Cornus florida</i>)	8
White Ash (<i>Fraxinus americana</i>)	6
Pignut Hickory (<i>Carya glabra</i>)	4
Sugar Maple (<i>Acer saccharum</i>)	4
Ironwood (<i>Carpinus caroliniana</i>)	4
Chestnut Oak (<i>Quercus prinus</i>)	3
Black Cherry (<i>Prunus serotina</i>)	3
Shagbark Hickory (<i>Carya ovata</i>)	2
Bitternut Hickory (<i>Carya cordiformis</i>)	1
American Elm (<i>Ulmus americana</i>)	1
Sassafras (<i>Sassafras albidum</i>)	1
Hornbeam (<i>Ostrya virginiana</i>)	1
Northern Red Oak (<i>Quercus rubra</i> var. <i>borealis</i>)	1

Seedlings:

Red Maple (*Acer rubrum*)
 Virginia Pine (*Pinus virginiana*)
 Pink Azalea (*Rhododendron nudiflorum*)
 Red Cedar (*Juniperus virginiana*)

Herbaceous Species:

<u>Species found Throughout the plot:</u>	<u>Blooming?</u>
Virginia Creeper (<i>Parthenocissus quinquefolia</i>)	N
False Solomon's Seal (<i>Smilacina racemosa</i>)	N
Lettuce (<i>Lactuca</i> sp.)	N
Little Brown Jug (<i>Asarum arifolium</i>)	N
Early Low Blueberry (<i>Vaccinium vacillans</i>)	N
Glaucous Greenbrier (<i>Smilax glauca</i>)	N

<u>Species found Throughout the plot (cont.):</u>	<u>Blooming?</u>
Common Greenbrier(<i>Smilax rotundifolia</i>)	N

<u>Species Common in some part of the plot:</u>	<u>Blooming?</u>
Squawroot (<i>Conopholis americana</i>)	Y
Cat Grape (<i>Vitis palmata</i>)	N
Sweet Joe-pye Weed (<i>Eupatorium purpureum</i>)	Y
Naked-flowered Tick-trefoil (<i>Desmodium nudiflorum</i>)	N
Spotted Wintergreen (<i>Chimaphila maculata</i>)	N

<u>Individuals found within the plot:</u>	<u>Blooming?</u>
Agrimony (<i>Agrimonia</i> sp.)	Y

Notes:

The list of herbaceous species in this quadrant is incomplete because a thunderstorm started when the plot was about halfway surveyed and so the rest of the plot was given only a cursory overview.

A coniferous region nearby explains the Virginia Pine and Red Cedar seedlings.

Forest Succession Information:

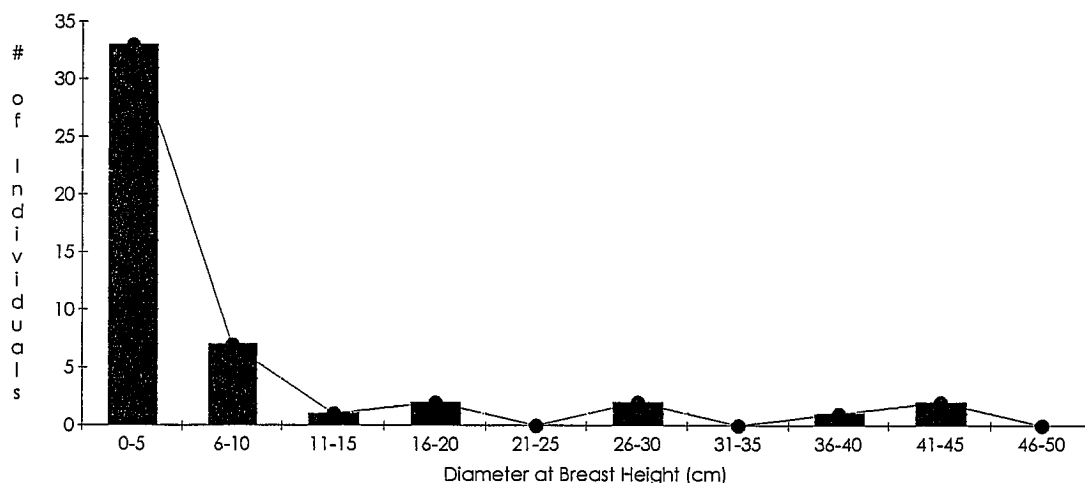


Figure 5: Tree Diameters in Quadrant -3.0, -4.5 Slagle Hollow, ridge habitat.

Note: In addition to the dbh's graphed in Figure 5, there was a tree with a dbh of 54 cm which did not fit on the chart and would not have changed the graph appreciably.

This plot was surveyed by Anna Hess.

Explanation:

This ridge quadrant is home to an association of oaks and hickories rather than the abundance of dominant species found in more moist regions of cove-hardwood forest. Of the herbaceous species, greenbriers, blueberries, and Spotted Wintergreen thrive in the sandy soil of ridge-tops. The understory, however, is typical of most forested regions of the park.

This quadrant contains mid-successional forest which is in a slightly more advanced stage of succession than most of the other quadrants in this study. The advanced successional stage is suggested by the large quantity of trees with dbh's of more than 25 cm. Disturbance events such as selective logging explains the dips in Figure 5.

Date: 8/20/97 Quadrant #: 14.0, -2.1 Location: Trinkle Hollow
 Habitat Type: ridge Forest Type: Oak/ hickory Association
 % Groundcover: 30%
 Slope of Ground: 5 (see notes) Direction Slope is facing: Southwest
 Does a creek run through the quadrant? No
 Any human traffic? Yes Does a trail run through the quadrant? Yes

Tree Species:

Dominant trees in each story:

Overstory: Chestnut Oak/ Shagbark Hickory/ Northern Red Oak/ Virginia Pine

Midcanopy: Downy Juneberry/ Red Maple/ Shagbark Hickory

Shrubs: Downy Juneberry/ Red Maple/ Red Cedar

<u>Species</u>	<u># of Individuals</u>
Downy Juneberry (<i>Amelanchier arborea</i>)	14
Red Maple (<i>Acer rubrum</i>)	9
Shagbark Hickory (<i>Carya ovata</i>)	7
Chestnut Oak (<i>Quercus prinus</i>)	4
Red Cedar (<i>Juniperus virginiana</i>)	3
Northern Red Oak (<i>Quercus rubra</i> var. <i>borealis</i>)	1
Flowering Dogwood (<i>Cornus florida</i>)	1
Sour-gum (<i>Nyssa sylvatica</i>)	1
Virginia Pine (<i>Pinus virginiana</i>)	1

Seedlings:

Chestnut Oak (*Quercus prinus*)
 Downy Juneberry (*Amelanchier arborea*)
 Flowering Dogwood (*Cornus florida*)
 Black Cherry (*Prunus serotina*)
 Mapleleaf Viburnum (*Viburnum acerifolium*)
 Northern Red Oak (*Quercus rubra* var. *borealis*)
 Virginia Pine (*Pinus virginiana*)
 Shagbark Hickory (*Carya ovata*)
 Red Cedar (*Juniperus virginiana*)
 Red Maple (*Acer rubrum*)

Herbaceous Species:

<u>Species found Throughout the plot:</u>	<u>Blooming?</u>
Twisted-stalk (<i>Streptopus amplexifolius</i>)	N
False Solomon's Seal (<i>Smilacina racemosa</i>)	N
Bullbrier Greenbrier (<i>Smilax bona-nox</i>)	N
Wild Yam (<i>Dioscorea quaternata</i>)	N
Spotted Wintergreen (<i>Chimaphila maculata</i>)	N

<u>Species found Throughout the plot (cont.):</u>	<u>Blooming?</u>
Early Low Blueberry (<i>Vaccinium vacillans</i>)	N
Common Highbush Blueberry (<i>Vaccinium corymbosum</i>)	N
Indian Pipe (<i>Monotropa uniflora</i>)	N

<u>Species Common in some part of the plot:</u>	<u>Blooming?</u>
Poison Ivy (<i>Rhus radicans</i>)	N
Smooth False Foxglove (<i>Aureolaria laevigata</i>)	Y
Solomon's Seal (<i>Polygonatum biflorum</i>)	N

<u>Individuals found within the plot:</u>	<u>Blooming?</u>
? Grape (<i>Vitis</i> sp.)	N

Notes:

I was unable to determine the percentage of ground area exposed to direct light since it was overcast.

The slope of the hill which the quadrant was on was 5 running along the ridge.

However, the ridgetop was very narrow and the quadrant included a lot of slope habitat as well. The slope habitat ranged from 0 to about 40 .

Forest Succession Information:

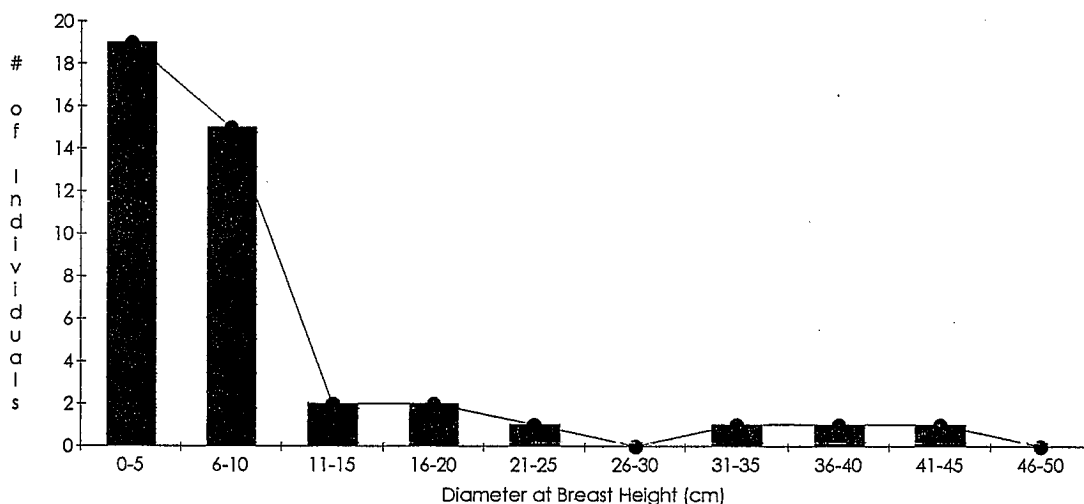


Figure 6: Tree Diameters in Quadrant 14.0, -2.1 Trinkle Hollow, ridge habitat

This plot was surveyed by Anna Hess.

Explanation:

This ridgetop habitat is a hickory-oak association due to the dryness of the ground and the sandy soil. Both of these features of the site are also conducive to the growth of blueberries which made up most of the herbaceous growth in the quadrant.

Figure 6 suggests that the quadrant is a mid-successional forest which has advanced further successionally than many other quadrants in this study as the graph did not begin to descend sharply until after dbh's of 10 cm.

Date: 8/1/97 Quadrant #: -3.9, -1.5 Location: Slagle Hollow
 Habitat Type: coniferous area
 Forest Type: White Pine surrounded by an Oak/hickory Association
 % Groundcover: 50% Percent of ground area exposed to direct light: 5%
 Slope of Ground: 45 Direction Slope is facing: West
 Does a creek run through the quadrant? No
 Any human traffic? No Does a trail run through the quadrant? No

Tree Species:

Dominant trees in each story:

Overstory: White Pine/ Chestnut Oak/ Pignut Hickory

Midcanopy: Sugar Maple

Shrubs: Beech/ Ironwood/ Sassafras/ Flowering Dogwood

<u>Species</u>	<u># of Individuals</u>
Sugar Maple (<i>Acer saccharum</i>)	23
Beech (<i>Fagus grandifolia</i>)	18
White Pine (<i>Pinus strobus</i>)	12
Ironwood (<i>Carpinus caroliniana</i>)	7
Sassafras (<i>Sassafras albidum</i>)	5
Pignut Hickory (<i>Carya glabra</i>)	4
Flowering Dogwood (<i>Cornus florida</i>)	4
Chestnut Oak (<i>Quercus prinus</i>)	4
Red Maple (<i>Acer rubrum</i>)	3
Northern Red Oak (<i>Quercus rubra</i> var. <i>borealis</i>)	2
Black Chokeberry (<i>Pyrus melanocarpa</i>)	2
White Ash (<i>Fraxinus americana</i>)	2
Blackjack Oak (<i>Quercus marilandica</i>)	2
Black Cherry (<i>Prunus serotina</i>)	1
Mapleleaf Viburnum (<i>Viburnum acerifolium</i>)	1

Seedlings:

Blackjack Oak (*Quercus marilandica*)

Mapleleaf Viburnum (*Viburnum acerifolium*)

Beech (*Fagus grandifolia*)

Sassafras (*Sassafras albidum*)

Mountain Laurel (*Kalmia latifolia*)

Wild Hydrangea (*Hydrangea arborescens*)

Herbaceous Species:

<u>Species found Throughout the plot:</u>	<u>Blooming?</u>
Greenbrier (<i>Smilax</i> sp.)	N
Blue-stemmed Goldenrod (<i>Solidago caesia</i>)	Y

<u>Species found Throughout the plot (cont.):</u>	<u>Blooming?</u>
Grape (<i>Vitis</i> sp.)	N
False Solomon's Seal (<i>Smilacina racemosa</i>)	N
Bedstraw (<i>Galium</i> sp.)	N
Heal-all (<i>Prunella vulgaris</i>)	N

<u>Species Common in some part of the plot:</u>	<u>Blooming?</u>
Downy False Foxglove (<i>Gerardia virginica</i>)	N
Rue Anemone (<i>Anemonella thalictroides</i>)	N
Virginia Creeper (<i>Parthenocissus quinquefolia</i>)	N
Christmas Fern (<i>Polystichum acrostichoides</i>)	N
Wild Yam (<i>Dioscorea quaternata</i>)	N
Foamflower, False Miterwort (<i>Tiarella cordifolia</i>)	N
Dwarf Cinquefoil (<i>Potentilla canadensis</i>)	N
Bloodroot (<i>Sanguinaria canadensis</i>)	N
Bullbrier Greenbrier (<i>Smilax bona-nox</i>)	N

<u>Individuals found within the plot:</u>	<u>Blooming?</u>
Goldenrod (<i>Solidago</i> sp.)	Y
Woodland Sunflower (<i>Helianthus divaricatus</i>)	Y
Violet (<i>Viola</i> sp.)	N
Ebony Spleenwort (<i>Asplenium platyneuron</i>)	N

Notes:

One of the hickories had Yellow-bellied Sapsucker holes in the trunk.
Only part of the area was truly coniferous, but the ground was covered with pine needles throughout the plot. In the White Pine area, many of the pines had lost their tops to winds, winter storms, or lightning and the brush was piled up beneath the trees, smothering all undergrowth.

Forest Succession Information:

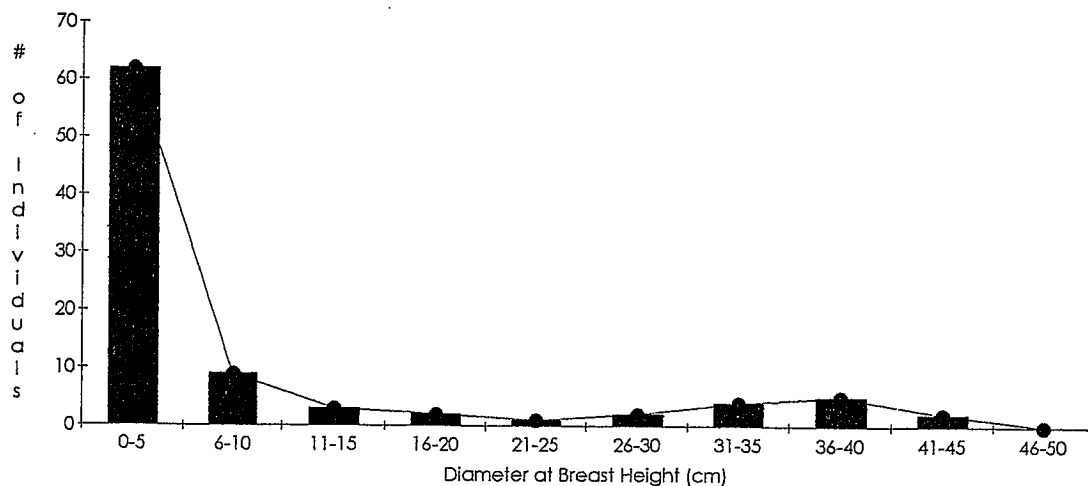


Figure 7: Tree Diameters in Quadrant -3.9, -1.5 Slagle Hollow, coniferous habitat

This plot was surveyed by Anna Hess and Jennifer Ragan.

Explanation:

This quadrant consists of an oak/ hickory association surrounding a coniferous region composed of White Pines. The tops of several of the White Pines were lost several years ago, creating a break in the canopy and allowing part of the region to return to an earlier stage of succession. The huge dip in Figure 7 after dbh's of about 10 cm corresponds to the lack of undergrowth in the coniferous area - very few of our understory trees are able to grow in the acidic soil beneath pines. The understory species listed were growing, for the most part, in the cove-hardwood forest which was also encompassed by the quadrant.

The stand of White Pines may have sprung up for a variety of reasons, all of which stem from a disturbance event in the past. Selective logging, fire, or the fall of a large tree could have opened up the canopy and given White Pine seedlings a chance to grow. Since White Pines grow very quickly, they were able to outcompete other seedlings in this disturbed land and formed a pure stand of White Pines.

Date: 8/19/97 Quadrant #: 7.4, 0.4 Location: Trinkle Hollow
 Habitat Type: coniferous Forest Type: Loblolly Pine
 % Groundcover: 5% Percent of ground area exposed to direct light: 5%
 Slope of Ground: 10 Direction Slope is facing: Northwest
 Does a creek run through the quadrant? No
 Any human traffic? Yes Does a trail run through the quadrant? No

Tree Species:

Dominant trees in each story:

Overstory: Loblolly Pine

Midcanopy: Sugar Maple/ Redbud

Shrubs: Sugar Maple/ White Ash/ Common Privet

<u>Species</u>	<u># of Individuals</u>
Sugar Maple (<i>Acer saccharum</i>)	19
Loblolly Pine (<i>Pinus taeda</i>)	12
Redbud (<i>Cercis canadensis</i>)	6
White Ash (<i>Fraxinus americana</i>)	6
Common Privet (<i>Ligustrum vulgare</i>)	4
Red Maple (<i>Acer rubrum</i>)	2
Flowering Dogwood (<i>Cornus florida</i>)	1
Slippery Elm (<i>Ulmus rubra</i>)	1
Red Cedar (<i>Juniperus virginiana</i>)	1
Black Cherry (<i>Prunus serotina</i>)	1
White Pine (<i>Pinus strobus</i>)	1

Seedlings:

Common Spicebush (*Lindera benzoin* var. *benzoin*)

Common Privet (*Ligustrum vulgare*)

Box Elder (*Acer negundo*)

Sugar Maple (*Acer saccharum*)

White Ash (*Fraxinus americana*)

Redbud (*Cercis canadensis*)

Flowering Dogwood (*Cornus florida*)

Herbaceous Species:

<u>Species found Throughout the plot:</u>	<u>Blooming?</u>
Virginia Creeper (<i>Parthenocissus quinquefolia</i>)	N
Japanese Honeysuckle (<i>Lonicera japonica</i>)	N
Poison Ivy (<i>Rhus radicans</i>)	N
Bowman's Root (<i>Gillenia trifoliata</i>)	N

<u>Species Common in some part of the plot:</u>	<u>Blooming?</u>
American Bittersweet (<i>Celastrus scandens</i>)	N
Spotted Wintergreen (<i>Chimaphila maculata</i>)	N
Glaucous Greenbrier (<i>Smilax glauca</i>)	N

<u>Individuals found within the plot:</u>	<u>Blooming?</u>
Showy Orchis (<i>Orchis spectabilis</i>)	N (two individuals)
Crane-fly Orchid (<i>Tipularia discolor</i>)	N (see notes)

Notes:

Just outside the quadrant but still within the coniferous area, I found a blooming Crane-fly Orchid which enabled me to identify the flower stalk of another individual of the same species within the quadrant. Other plants within five feet of the quadrant included Cut-leaved Grape Ferns, a Rattlesnake Fern, Thimbleweed, and Downy Rattlesnake Plantain.

The Loblolly Pines were growing in almost perfect rows, suggesting that they were planted rather than having arisen on their own.

Forest Succession Information:

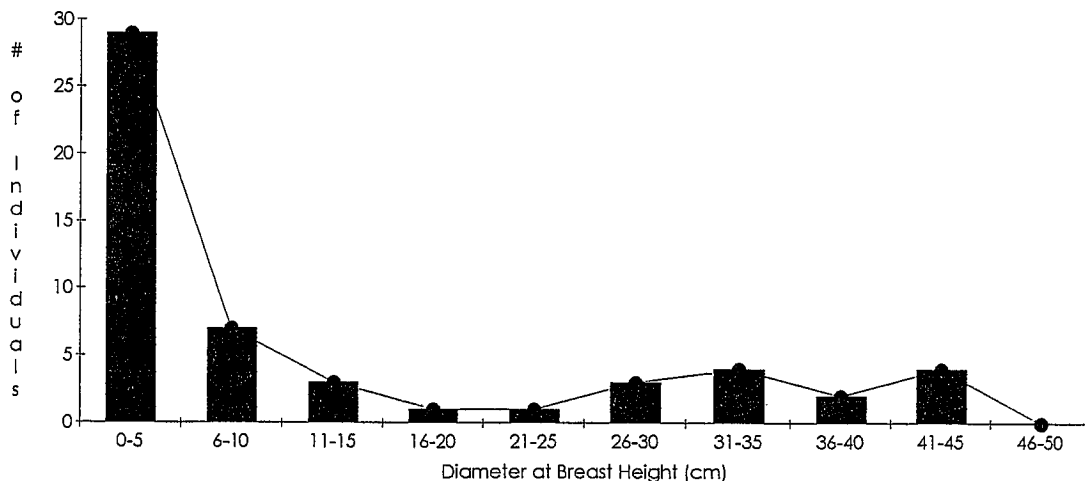


Figure 8: Tree Diameters in Quadrant 7.4, 0.4 Trinkle Hollow, coniferous habitat

This plot was surveyed by Anna Hess.

Explanation:

Figure 8 does not resemble any of the graphs in Appendix C since the trees in the overcanopy were planted artificially at some time in the past. Furthermore, the area is coniferous, reducing the amount of shrubby undergrowth. However, Privet is becoming established in this environment (since this quadrant, like Quadrant 9.0, -0.5 is at the edge of the park.)

Date: 8/6/97 Quadrant #: Lakeside A Location: Slagle Hollow
 Habitat Type: lakeside Forest Type: Cove-hardwood
 % Groundcover: 5% Percent of ground area exposed to direct light: 5%
 Slope of Ground: ranging from about 70 at the edge of the lake to about 45
 Direction Slope is facing: North
 Does a creek run through the quadrant? No
 Any human traffic? Yes
 Does a trail run through the quadrant? No, but there is a trail right above the quadrant

Tree Species:

Dominant trees in each story:

Overstory: Yellow Buckeye/ Yellow Birch/ Tulip-tree
 Midcanopy: Ironwood/ Hornbeam/ Flowering Dogwood
 Shrubs: Witch-hazel

<u>Species</u>	<u># of Individuals</u>
Common Witch-hazel (<i>Hamamelis virginiana</i>)	33
Ironwood (<i>Carpinus caroliniana</i>)	31
Hornbeam (<i>Ostrya virginiana</i>)	16
Sugar Maple (<i>Acer saccharum</i>)	12
Flowering Dogwood (<i>Cornus florida</i>)	10
Yellow Buckeye (<i>Aesculus octandra</i>)	7
Sassafras (<i>Sassafras albidum</i>)	5
Yellow Birch (<i>Betula alleghaniensis</i>)	5
Northern Red Oak (<i>Quercus rubra</i> var. <i>borealis</i>)	4
Tulip-tree (<i>Liriodendron tulipifera</i>)	2
White Ash (<i>Fraxinus americana</i>)	1
Red Cedar (<i>Juniperus virginiana</i>)	1
Bitternut Hickory (<i>Carya cordiformis</i>)	1
Slippery Elm (<i>Ulmus rubra</i>)	1

Seedlings:

Numerous seedlings of the same tree species listed above.
 White Oak (*Quercus alba*)

Herbaceous Species:

<u>Species found Throughout the plot:</u>	<u>Blooming?</u>
Virginia Creeper (<i>Parthenocissus quinquefolia</i>)	N
Christmas Fern (<i>Polystichum acrostichoides</i>)	N
Bloodroot (<i>Sanguinaria canadensis</i>)	N
Jack-in-the-Pulpit (<i>Arisaema triphyllum</i>)	N
Spotted Wintergreen (<i>Chimaphila maculata</i>)	N
Ebony Spleenwort (<i>Asplenium platyneuron</i>)	N

Species found Throughout the plot (cont.):Black Cohosh (*Cimicifuga racemosa*)

N

Rue Anemone (*Anemonella thalictroides*)

N

Species Common in some part of the plot:Blooming?Tall Bellflower (*Campanula americana*)

Y

Bedstraw (*Galium* sp.)

N

Poison Ivy (*Rhus radicans*)

N

Canada Moonseed (*Menispermum canadense*)

N

Indian Pipe (*Monotropa uniflora*)

N

False Solomon's Seal (*Smilacina racemosa*)

N

Maidenhair Fern (*Adiantum pedatum*)

N

Individuals found within the plot:Blooming?Wild Yam (*Dioscorea quaternata*)

N

Notes:

The quadrant included about 250 feet of shoreline from the bridge into Slagle Hollow to the end of Quadrant -2.0, -1.6 (the slope plot in Slagle Hollow) and extended from the shore back into the woods for 10 feet.

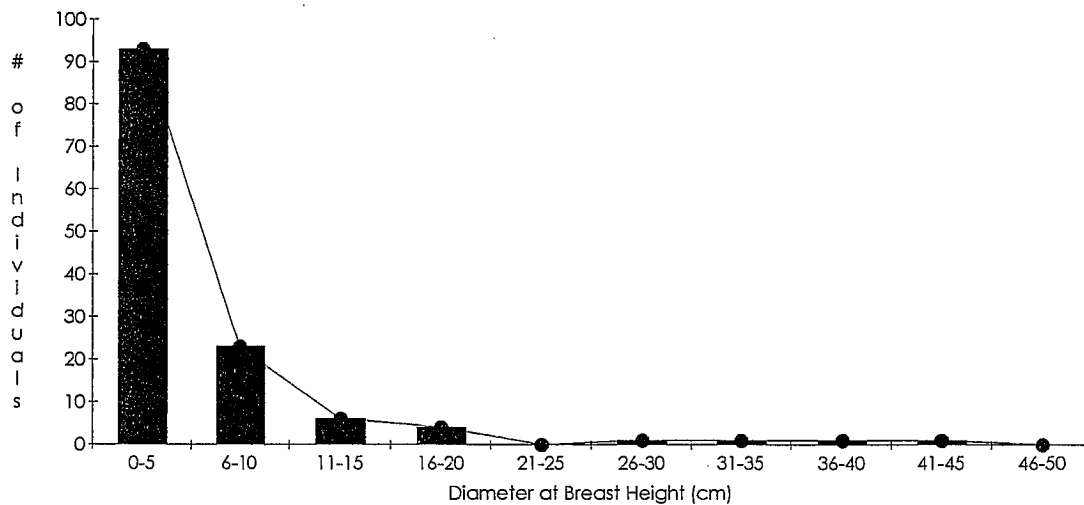
Forest Succession Information:

Figure 9: Tree Diameters in Quadrant Lake A Slagle Hollow, lakeside habitat

This plot was surveyed by Anna Hess.

Explanation:

All of the dominant species in this quadrant often grow in rich, moist soil such as that found beside the lake. However, Hornbeam, especially, grows almost exclusively in such damp soil. Like most of the other quadrants in this study, this appears to be a mid-successional forest which has experienced a disturbance (shown as a dip in Figure 9 at dbh's of 21 - 25.)

Date: 8/15/97 Quadrant #: 9.7, -2.8 Location: Trinkle Hollow
 Habitat Type: Early Succession Forest or Meadow
 % Groundcover: 100% Percent of ground area exposed to direct light: 100%
 Slope of Ground: 5 Direction Slope is facing: East
 Does a creek run through the quadrant? No
 Any human traffic? Yes Does a trail run through the quadrant? Yes

Tree Species:

Note: All tree species in the study area were small, so the trees were simply listed as are the herbaceous species.

Most Abundant Species in the Plot:

Tulip-tree (*Liriodendron tulipifera*)
 Red Maple (*Acer rubrum*)
 Black Locust (*Robinia pseudo-acacia*)
 Black Cherry (*Prunus serotina*)

Common Species the Plot:

Sassafras (*Sassafras albidum*)
 Smooth Sumac (*Rhus glabra*)
 Common Elderberry (*Sambucus canadensis*)

Individuals (one or two individuals) Found Within the Plot:

White Ash (*Fraxinus americana*)
 Blackjack Oak (*Quercus marilandica*)
 Winged Sumac (*Rhus copallina*)
 Red Cedar (*Juniperus virginiana*)
 Virginia Pine (*Pinus virginiana*)

Herbaceous Species:

<u>Species found Throughout the plot:</u>	<u>Blooming?</u>
Heal-all (<i>Prunella vulgaris</i>)	Y
Goldenrod (<i>Solidago</i> sp.)	N
Queen Anne's Lace (<i>Daucus carota</i>)	Y
Blackberry (<i>Rubus</i> sp.)	N
Poison Ivy (<i>Rhus radicans</i>)	N
Common Plantain (<i>Plantago major</i>)	N
?Oxalis (<i>Oxalis</i> sp.)	Y
Various Unidentified Grasses	some were
?Dewberry (<i>Rubus</i> sp.)	N
Japanese Honeysuckle (<i>Lonicera japonica</i>)	N
Common Ragweed (<i>Ambrosia artemisiifolia</i>)	N

<u>Species Common in some part of the plot:</u>	<u>Blooming?</u>
False Solomon's Seal (<i>Smilacina racemosa</i>)	N
Virginia Creeper (<i>Parthenocissus quinquefolia</i>)	N
Christmas Fern (<i>Polystichum acrostichoides</i>)	N
Foamflower (<i>Tiarella cordifolia</i>)	N
Greenbrier (<i>Smilax</i> sp.)	N
Black-eyed Susan (<i>Rudbeckia hirta</i>)	Y
Agrimony (<i>Agrimonia</i> sp.)	Y
Rose-pink (<i>Sabatia angularis</i>)	Y
Spotted St. Johnswort (<i>Hypericum punctatum</i>)	Y
Virgin's Bower (<i>Clematis virginiana</i>)	Y

<u>Individuals found within the plot:</u>	<u>Blooming?</u>
Grape (<i>Vitis</i> sp.)	N
?Thistle	Y
Common Mullein (<i>Verbascum thapsus</i>)	N

Notes:

The area surveyed in this plot was along the trail in the power-line cut in Trinkle Hollow. Flora was identified, but no trees were quantified.

This plot was surveyed by Anna Hess.

Explanation:

This quadrant is typical of a meadow becoming an early succession forest. The initial growth of exotic herbaceous plants such as Queen Anne's Lace, Common Plantain, and Japanese Honeysuckle, as well as native, sun-loving wildflowers such as goldenrods was soon joined by blackberry brambles and several species of trees. At this time, the trees have just begun to grow large enough in some places to shade out the sun-loving species and provide habitat for woodland plants such as Christmas Ferns, and False Solomon's Seal.

Conclusions

The forests of Steele Creek Park are mostly cove-hardwood communities in which the features of each site determine the species composition. However, oak-hickory associations may be found in the dry soil of ridgetops and stands of White Pine mark areas burnt or in some other way disturbed in the past. None of the quadrants examined contained late successional forests although the forest in the Trinkle Hollow ridge habitat appeared the most advanced successional, probably because trees on ridges were often not cut when forests were logged because they were difficult to reach and served as boundary lines between properties. Nevertheless, only the meadow at the power line cut in Trinkle Hollow Boundary Area exhibited early successional growth. Most quadrants were set back to mid-successional forests by selective logging about 60 years ago and the size-class bar graphs of some quadrants also suggested smaller disruptions such as tree falls. All of the quadrants in which dbh of trees was quantified had a dip in the size-class bar graph between dbh's 11 and 30 cm which may correspond to the selective logging in the park's history. For more complete discussions of each quadrant, see the Explanation section of that quadrant.

Several of the new species found in this survey which had not been noted in the park during the natural history inventories completed in the 1970's were alien, which is a cause for great concern as the spread of such alien species as Common Privet within the park crowds out other shrub species. However, other plants, such as Common Cattail, Yellow Flag, and Water Plantain, which were not present in the park during earlier inventories, are now present as a result of better management of our lakeside habitat and several new woodland species were found as well. Other species, such as Trailing Arbutus, which were noted for the first time in the park during the Summer of 1997 were most likely overlooked in other inventories but almost certainly already occurred within the park.

A list of the flora of Steele Creek Park was compiled from natural history inventories performed by Brent Rowell, Joseph Jackson, and Louise Hopson Howard and was updated using the information acquired in this study. Many species which had never been found in the park were discovered in this study and are marked with two asterisks in the compiled list of the flora of Steele Creek Park (Appendix A.) Furthermore, two stands of Pink Lady's Slipper, a plant listed as endangered in the state of Tennessee, were found in the study. However, even the list of plants compiled in this study is not complete. The procedure outlined in this paper can be used by naturalists and volunteers at Steele Creek Park to form a more complete picture of the plant communities and species within the park. Inventories should also be done in seasons other than Summer as many spring wildflowers which become inconspicuous or disappear entirely later in the year were certainly overlooked in the summer natural history inventories of the park.

Appendix A

The following lists of the flora of Steele Creek Park were compiled from natural history inventories performed by Joseph W. Jackson (1971,) Brent Rowell (1972,) Louise Hopson Howard (1972,) and Anna Hess (1997.) Species marked with a question mark (?) were not listed in any of the identification guides I used. Species known to still exist within the park are marked with an asterisk (*) and species which were not present during the natural history inventories performed during the early 1970's but are now known to exist within the park are marked with two asterisks (**). Many of the species which are not marked by an asterisk still occur within the park; more complete inventories are needed to search for those species.

Wildflowers

Cattail Family (Typhaceae):

**Common Cattail (*Typha latifolia*)

Arrowhead Family (Alismataceae)

**Water-plantain (*Alisma triviale*)

Broad-leaved Arrowhead (*Sagittaria latifolia*)

Arum Family (Araceae):

*Jack-in-the-Pulpit (*Arisaema triphyllum*)

Lily Family (Liliaceae) :

Colicroot, Stargrass (*Aletris farinosa*)

Wild Garlic (*Alium canadense*)

*White Clintonia (*Clintonia umbellulata*)

*Yellow Mandarin (*Disporum lanuginosum*)

*Day-lily (*Hemerocallis fulva*)

*Turk's-cap Lily (*Lilium superbum*)

*Solomon's Seal (*Polygonatum biflorum*)

*False Solomon's Seal (*Smilacina racemosa*)

*Greenbriers and Catbriers (*Smilax* sp.)

*Twisted-stalk, White Mandarin (*Streptopus amplexifolius*)

*Red or Purple Trillium, Wakerobin (*Trillium undulatum*)

Large-flowered Bellwort (*Uvularia grandiflora*)

*Perfoliate Bellwort (*Uvularia perfoliata*)

*Wild Oats, Sessile Bellwort (*Uvularia sessifolia*)

Iris Family (Iridaceae):

Blackberry-lily (*Belamcanda chinensis*)

*Dwarf Crested Iris (*Iris cristata*)

**Yellow Flag (*Iris pseudacorus*)

Blue-eyed Grass (*Sisyrinchium graminoides*)

Orchid Family (Orchidaceae):

- *Puttyroot, Adam and Eve (*Aplectrum hyemale*)
- *Pink Lady's Slipper (*Cypripedium acaule*)
- Yellow Lady's Slipper (*Cypripedium calceolus*)
- *Showy Orchis (*Orchis spectabilis*)
- Wister's Coralroot (*Corallorhiza wisteriana*)
- *Downy Rattlesnake Plantain (*Goodyera pubescens*)
- **Crane-fly Orchid (*Tipularia discolor*)

Buckwheat Family (Polygonaceae):

- (*Polygonella polygama*)
- Arrow-leaved Tearthumb (*Polygonum sagittatum*)
- Climbing False Buckwheat (*Polygonum scandens*)
- *Sheep or Common Sorrel (*Rumex acetosella*)
- *Curled Dock (*Rumex crispus*)

Birthwort Family (Aristolochiaceae):

- Dutchman's Pipe (*Aristolochia durior*)
- Wild Ginger (*Asarum canadense* var. *canadense*)
- **Little Brown Jug (*Asarum arifolium*)
- Heart-Leaf (*Hexastylis arifolia*)
- Heart-Leaf (*Hexastylis virginica*)

Purslane Family (Portulacaceae):

- Carolina Spring-Beauty (*Claytonia caroliniana*)
- *Spring-Beauty (*Claytonia virginica*)

Nettle Family (Urticaceae):

- False Nettle, Bog-hemp (*Boehmeria cylindrica*)
- *Stinging Nettle (*Urtica dioica*)

Pokeweed Family (Phytolaccaceae):

- *Poke, Pokeweed (*Phytolacca americana*)
- ?Poke (*Phytolacca decandra*)

Pink Family (Caryophyllaceae):

- Mouse-Ear Chickweed (*Cerastium viscosum*)
- Mouse-Ear Chickweed (*Cerastium vulgatum*)
- *Deptford Pink (*Dianthus armeria*)
- Whitlow-Wort (*Paronychia canadensis*)
- *Fire Pink (*Silene virginica*)
- Star Chickweed (*Stellaria pubera*)
- Bouncing Bet (*Saponaria officinalis*)

Buttercup Family (Ranunculaceae):

- White Baneberry (*Actaea pachypoda*)
- Mountain Anemone (*Anemone lancifolia*)
- Wood Anemone (*Anemone quinquefolia*)
- *Rue Anemone (*Anemonella thalictroides*)
- *Thimbleweed (*Anemone virginiana*)
- *Black Cohosh, Bugbane (*Cimicifuga racemosa*)
- *Virgin's Bower (*Clematis virginiana*)

- Dwarf or Spring Larkspur (*Delphinium tricornes*)
- *Sharp-lobed Hepatica (*Hepatica acutiloba*)
- *Round-lobed Hepatica (*Hepatica americana*)
- Kidneyleaf Buttercup (*Ranunculus abortivus*)
- (*Ranunculus allegheniensis*) ^{s s1}
- Bulbous Buttercup (*Ranunculus bulbosus*)
- Hispid Buttercup (*Ranunculus hispidus*)
- Hooked Buttercup (*Ranunculus recurvatus*)
- Swamp Buttercup (*Ranunculus septentrionalis*)
- Meadow Rue (*Thalictrum clavatum*)
- Early Meadow Rue (*Thalictrum dioicum*)
- Barberry Family (Berberidaceae):
- Blue Cohosh (*Caulophyllum thalictroides*)
- *May Apple, Mandrake (*Podophyllum peltatum*)
- Moonseed Family (Menispermaceae):
- *Canada Moonseed (*Menispermum canadense*)
- Poppy Family (Papaveraceae):
- *Bloodroot (*Sanguinaria canadensis*)
- Mustard Family (Cruciferae):
- Smooth Rock Cress (*Arabis laevigata*)
- Winter Cress (*Barbarea vulgaris*)
- Spring Cress (*Cardamine bulbosa*)
- Pennsylvania Bittercress (*Cardamine pensylvanica*)
- Toothwort, Pepperwort (*Dentaria diphylla*)
- Cut-Leaved Toothwort (*Dentaria laciniata*)
- Slender Toothwort (*Dentaria heterophylla*)
- ?Toothwort (*Dentaria incisifolia*)
- Cow-Cress, Field Peppergrass (*Lepidium campestre*)
- Poor-Man's-Pepper, Peppergrass (*Lepidium virginicum*)
- Sedum Family (Crassulaceae):
- *Wild Stonecrop (*Sedum ternatum*)
- Saxifrage Family (Saxifragaceae):
- False Goat's Beard (*Astilbe biternata*)
- Alumroot (*Heuchera americana*)
- Alumroot (*Heuchera pubescens*)
- *Wild Hydrangea (*Hydrangea arborescens*)
- *Miterwort (*Mitella diphylla*)
- *Foamflower, False Miterwort (*Tiarella cordifolia*)
- Rose Family (Rosaceae):
- Agrimony (*Agrimonia pubescens*)
- Agrimony (*Agrimonia striata*)
- Goat's Beard (*Aruncus dioicus*)
- *Common Strawberry (*Fragaria virginiana*)
- *White Avens (*Geum canadense*)
- Rough Avens (*Geum virginianum*)

- *Bowman's Root (*Gillenia trifoliata*)
- *Dwarf Cinquefoil (*Potentilla canadensis*)
- Rough-Fruited Cinquefoil (*Potentilla recta*)
- Pasture or Carolina Rose (*Rosa carolina*)
- Swamp Rose (*Rosa palustris*)

Pea Family (Leguminosae):

- *Hog-peanut (*Amphicarpa bracteata*)
- *Wild Sensitive-plant (*Cassia nictitans*)
- *Pointed-leaved Tick-trefoil (*Desmodium glutinosum*)
- *Naked-flowered Tick-trefoil (*Desmodium nudiflorum*)
- Panicked Tick-trefoil (*Desmodium paniculatum*)
- Vetchling (*Lathyrus venosus*)
- Hairy Bush-clover (*Lespedeza hirta*)
- White Sweet Clover, Melilot (*Melilotus alba*)
- Yellow Sweet Clover (*Melilotus officinalis*)
- Wild Bean (*Phaseolus polystachios*)
- Goat's Rue (*Tephrosia virginiana*)
- *Red Clover (*Trifolium pratense*)
- Smaller Hop Clover (*Trifolium procumbens*)
- *White Clover (*Trifolium repens*)
- Vetch (*Vicia caroliniana*)

Wood-Sorrel Family (Oxalidaceae):

- Yellow Wood-Sorrel (*Oxalis europaea*)
- *Large Yellow Wood-Sorrel (*Oxalis grandis*)
- ?Wood-Sorrel (*Oxalis repens*)
- Violet Wood-Sorrel (*Oxalis violacea*)

Geranium Family (Geraniaceae):

- Carolina Cranesbill (*Geranium carolinianum*)
- Cranesbill (*Geranium dissectum*)
- *Wild Geranium (*Geranium maculatum*)
- ?Cranesbill (*Geranium rotundifolium*)

Flax Family (Linaceae):

- Yellow Flax (*Linum virginianum*)

Milkwort Family (Polygalaceae):

- Seneca Snakeroot (*Polygala senega*)

Spurge Family (Euphorbiaceae):

- *Flowering Spurge (*Euphorbia corollata*)

Sumac or Cashew Family (Anacardiaceae):

- *Poison Ivy (*Rhus radicans*)

Touch-me-not Family (Balsaminaceae):

- Pale Touch-me-not, Jewelweed (*Impatiens pallida*)
- *Spotted Touch-me-not, Jewelweed (*Impatiens capensis*)

Mallow Family (Malvaceae):

- Swamp Rose-mallow (*Hibiscus palustris*)

St. Johnswort Family (Hypericaceae):

Common St. Johnswort (*Hypericum perforatum*)*Spotted St. Johnswort (*Hypericum punctatum*)St. Andrew's Cross (*Ascyrum hypericoides*)

Violet Family (Violaceae):

Canada Violet (*Viola canadensis*)Smooth Yellow Violet (*Viola eriocarpa*)Halberd-leaved Violet (*Viola hastata*)*Common Blue Violet (*Viola papilionacea*)Downy Yellow Violet (*Viola pubescens*)*Wild Pansy (*Viola rafinesquii*)Long-spurred Violet (*Viola rostrata*)Pale or Cream Violet (*Viola striata*)Three-lobed Violet (*Viola triloba*)

Evening Primrose Family (Onagraceae):

?Enchanter's Nightshade (*Circaea canadensis*)*Common Evening Primrose (*Oenothera biennis*)

Ginseng Family (Araliaceae):

Wild Sarsaparilla (*Aralia nudicaulis*)Ginseng (*Panax quinquefolius*)

Carrot or Parsley Family (Umbelliferae):

Angelica (*Angelica artropurpurea*)Water Hemlock (*Cicuta maculata*)Honesty, Wild Chervil (*Cryptotaenia canadensis*)*Queen Anne's Lace, Wild Carrot (*Daucus carota*)Sweet Cicely (*Osmorhiza claytoni*)Aniseroor (*Osmorhiza longistylis*)Black Snakeroot (*Sanicula canadensis*)Black Snakeroot (*Sanicula gregaria*)Black Snakeroot (*Sanicula trifoliata*)(*Thaspium barbinode*)Golden Alexanders (*Zizia trifoliata*)

Wintergreen Family (Pyrolaceae):

*Spotted Wintergreen (*Chimaphila maculata*)Pipsissewa (*Chimaphila umbellata*)Pinesap (*Monotropa hypopithys*)*Indian Pipe (*Monotropa uniflora*)

Heath Family (Ericaceae):

**Trailing Arbutus (*Epigaea repens*)*Wintergreen, Checkerberry (*Gaultheria procumbens*)

Diapensia Family (Diapensiaceae):

Galax, Beetleweed (*Galax aphylla*)

Primrose Family (Primulaceae):

Scarlet Pimpernel (*Anagallis arvensis*)**Fringed Loosestrife (*Lysimachia ciliata*)

- Whorled Loosestrife (*Lysimachia quadrifolia*)
- (*Steironema ciliatum*)
- Logania Family (Loganiaceae):
- Indian Pink (*Spigelia marilandica*)
- Gentian Family (Gentianaceae):
- Pennywort (*Obolaria virginica*)
- **Rose-pink (*Sabatia angularis*)
- Dogbane Family (Apocynaceae):
- Indian Hemp (*Apocynum cannabinum*)
- Milkweed Family (Asclepiadaceae):
- Poke Milkweed (*Asclepias exultata*)
- Swamp Milkweed (*Asclepias incarnata*)
- *Four-leaved Milkweed (*Asclepias quadrifolia*)
- *Common Milkweed (*Asclepias syriaca*)
- *Butterfly Weed (*Asclepias tuberosa*)
- White Milkweed (*Asclepias variegata*)
- Morning Glory Family (Convolvulaceae):
- *Wild Potato Vine (*Ipomoea pandurata*)
- *Common Morning Glory (*Ipomoea purpurea*)
- Dodder (*Cuscuta* sp.)
- Phlox Family (Polemoniaceae):
- *Wild Sweet-william (*Phlox maculata*)
- Waterleaf Family (Hydrophyllaceae):
- Large-leaved Waterleaf (*Hydrophyllum macrophyllum*)
- *Phacelia (*Phacelia bipinnatifida*)
- Vervain Family (Verbenaceae):
- Vervain (*Verbena* sp.)
- Forget-me-not Family (Boraginaceae):
- Wild Comfrey (*Cynoglossum virginianum*)
- Mint Family (Labiatae):
- Blue Giant Hyssop (*Agastache foeniculum*)
- Horse-balm, Richweed (*Collinsonia canadensis*)
- Horsemint (*Monarda clinopodia*)
- *Wild Bergamot (*Monarda fistulosa*)
- *Gill-over-the-ground, Ground-ivy (*Glechoma hederacea*)
- American Pennyroyal (*Hedeoma pulegioides*)
- Sharp-winged Monkey-flower (*Mimulus alatus*)
- *Heal-all, Selfheal (*Prunella vulgaris*)
- Lyre-leaved Sage (*Salvia lyrata*)
- Basil (*Satureja vulgaris*)
- Hairy Skullcap (*Scutellaria elliptica*)
- Showy Skullcap (*Scutellaria serrata*)
- ?Hedge Nettle (*Stachys riddellii*)
- Tomato Family (Solanaceae):
- Horse Nettle (*Solanum carolinense*)

Snapdragon Family (Scrophulariaceae):

- *Downy False Foxglove (*Gerardia virginica*)
- **Smooth False Foxglove (*Aureolaria laevigata*)
- Turtlehead (*Chelone glabra*)
- False Pimpernel (*Lindernia anagallidea*)
- Wood-Betony, Lousewort (*Pedicularis canadensis*)
- Beard-Tongue (*Penstemon laevigatus*)
- *Moth Mullein (*Verbascum blattaria*)
- *Common Mullein (*Verbascum thapsus*)
- Corn Speedwell (*Veronica arvensis*)
- Common Speedwell (*Veronica officinalis*)
- Thyme-leaved Speedwell (*Veronica serpyllifolia*)

Bignonia Family (Bignoniaceae):

- Trumpet Creeper (*Campsis radicans*)
- Cross-vine (*Anisostichus capreolata*)

Broomrape Family (Orobanchaceae):

- *Squawroot (*Conopholis americana*)
- *Beechdrops (*Epifagus virginiana*)
- *One-flowered Cancer Root (*Orobanche uniflora*)

Acanthus Family (Acanthaceae):

- ?(*Ruellia humilis*)

Plantain Family (Plantaginaceae):

- *English Plantain (*Plantago lanceolata*)
- *Common Plantain (*Plantago major*)
- *Pale Plantain (*Plantago rugellii*)

Bedstraw Family (Rubiaceae):

- Cleavers (*Galium aparine*)
- Rough Bedstraw (*Galium asprellum*)
- White Wild Licorice (*Galium circaezans*)
- (*Galium pilosum*)
- Fragrant Bedstraw (*Galium triflorum*)
- Long-leaved Bluets (*Houstonia longifolia*)
- Large Houstonia (*Houstonia purpurea*)
- *Partridgeberry (*Mitchella repens*)

Bluebell Family (Campanulaceae):

- *Tall Bellflower (*Campanula americana*)
- Southern Harebell (*Campanula divaricata*)
- *Cardinal Flower (*Lobelia cardinalis*)
- Indian Tobacco (*Lobelia inflata*)
- Great Lobelia (*Lobelia siphilitica*)
- *Venus's Looking-glass (*Specularia perfoliata*)

Sunflower or Daisy Family (Compositae):

- Yarrow (*Achillea millefolium*)
- *Common Ragweed (*Ambrosia artemisiifolia*)
- *Great Ragweed (*Ambrosia trifida*)

- **Field Pussytoes (*Antennaria neglecta*)
- Plantain-leaved Pussytoes (*Antennaria neodioica*)
- Solitary Pussytoes (*Antennaria solitaria*)
- *Common Ragweed (*Ambrosia artemisiifolia*)
- *Great Ragweed (*Ambrosia trifida*)
- **Lamb Succory (*Arnoseris minima*)
- White Wood Aster (*Aster diuvaricatus*)
- Large-leaved Aster (*Aster macrophyllus*)
- White-topped Aster (*Aster paternus*)
- **Wavy-leaved Aster (*Aster undulatus*)
- *Beggar-ticks (*Bidens* sp.)
- *Oxeye Daisy (*Chrysanthemum leucanthemum*)
- Golden-aster (*Chrysopsis* sp.)
- *Chicory (*Cichorium intybus*)
- Chicory (*Cichorium intybus* forma *album*)
- Bull Thistle (*Cirsium vulgare*)
- Thistle (*Cirsium nuttallii*)
- Tickseed (*Coreopsis grandiflora*)
- Greater Tickseed (*Coreopsis major*)
- *Daisy Fleabane (*Erigeron annuus*)
- Common Fleabane, Philadelphia Fleabane (*Erigeron philadelphicus*)
- Robin's Plantain (*Erigeron pulchellus*)
- **Daisy Fleabane (*Erigeron strigosus*)
- Hollow Joe-pye Weed (*Eupatorium fistulosum*)
- *Boneset (*Eupatorium perfoliatum*)
- *Sweet Joe-pye Weed (*Eupatorium purpureum*)
- White Snakeroot (*Eupatorium rugosum*)
- Galinsoga (*Galinsoga cilata*)
- *Woodland Sunflower (*Helianthus divaricatus*)
- Ox-eye (*Heliopsis helianthoides*)
- Yellow Hawkweed, King Devil (*Hieracium pratense*)
- Rattlesnake Weed (*Hieracium venosum*)
- ?Dwarf Dandelion (*Krigia occidentalis*)
- Wild Lettuce (*Lactuca canadensis*)
- (*Lactuca ocariola*)
- Prickly Lettuce (*Lactuca scariola*)
- White Lettuce, Rattlesnake-root (*Prenanthes alba*)
- Tall White Lettuce (*Prenanthes altissima*)
- *Black-eyed Susan (*Rudbeckia hirta*)
- Golden Ragwort (*Senecio aureus*)
- Squaw Weed (*Senecio obovatus*)
- **Blue-stemmed Goldenrod (*Solidago caesia*)
- Canada Goldenrod (*Solidago canadensis*)
- *Common Dandelion (*Taraxacum officinale*)
- Yellow Goat's-beard (*Tragapogon pratensis*)

Crownbeard (*Verbesina virginica*)

*New York Ironweed (*Vernonia noveboracensis*)

Ferns

Equisetaceae:

*Rough Horsetail, Common Scouring Rush (*Equisetum hiemale*)

Lycopodiaceae:

Running-pine (*Lycopodium complanatum* var. *flabelliforme*)

Ophioglossaceae:

*Leathery Grape Fern (*Botrychium multifidum*)

*Cut-leaved Grape Fern (*Botrychium dissectum*)

*Rattlesnake Fern (*Botrychium virginianum*)

Polypodiaceae:

Marginal Woodfern (*Dryopteris marginalis*)

Goldie's Woodfern (*Dryopteris goldiana*)

*Broad Beech Fern (*Thelypteris hexagonoptera*)

New York Fern (*Thelypteris noveboracensis*)

*Ebony Spleenwort (*Asplenium platyneuron*)

Maidenhair Spleenwort (*Asplenium trichomanes*)

Walking Fern (*Camptosorus rhizophyllus*)

Lady Fern (*Athyrium Filix-femina*)

Narrow-leaved Spleenwort (*Athyrium pycnocarpon*)

Hayscented Fern (*Dennstaedtia punctilobula*)

*Sensitive Fern (*Onoclea sensibilis*)

*Christmas Fern (*Polystichum acrostichoides*)

*(*Polystichum acrostichoides* f. *incisum*)

*Bracken (*Pteridium aquilinum*)

Purple-stemmed Cliffbrake (*Pellaea atropurpurea*)

*Maidenhair Fern (*Adiantum pedatum*)

Hairy Lipfern (*Cheilanthes lanosa*)

Bladder Fern (*Cystopteris protrusa*)

Osmundaceae:

Cinnamon Fern (*Osmunda cinnamomea*)

Trees, Shrubs, and Woody Vines

Pinaceae:

*Red Cedar (*Juniperus virginiana*)

Shortleaf Pine (*Pinus echinata*)

*White Pine (*Pinus strobus*)

**Loblolly Pine (*Pinus taeda*)

*Scrub Pine, Virginia Pine (*Pinus virginiana*)

*Eastern Hemlock (*Tsuga canadensis*)

Liliaceae:

- *Bullbrier Greenbrier (*Smilax bona-nox*)
- **Glaucous Greenbrier (*Smilax glauca*)
- *Laurel Greenbrier (*Smilax laurifolia*)
- Bristly Greenbrier (*Smilax tamnoides* var. *hispida*)
- *Common Greenbrier (*Smilax rotundifolia*)

Dioscoreaceae:

- *Wild Yam (*Dioscorea quaternata*)

Salicaceae:

- Balsam Poplar (*Populus balsamifera*)
- Lombardy Poplar (*Populus nigra* var. *italica*)
- Black Willow (*Salix nigra*)
- Silky Willow (*Salix sericea*)

Juglandaceae:

- *Bitternut Hickory (*Carya cordiformis*)
- *Pignut Hickory (*Carya glabra*)
- *Shagbark Hickory (*Carya ovata*)
- *Pale Hickory (*Carya pallida*)
- Mockernut Hickory (*Carya tomentosa*)
- Butternut (*Juglans cinerea*)
- *Black Walnut (*Juglans nigra*)

Corylaceae:

- ? Alder (*Alnus* sp.)
- *Yellow Birch (*Betula alleghaniensis*)
- Black Birch, Sweet Birch (*Betula lenta*)
- *Ironwood (*Carpinus caroliniana*)
- *American Hazelnut (*Corylus americana*)
- *Hornbeam (*Ostrya virginiana*)

Fagaceae:

- Chestnut (*Castanea dentata*)
- Eastern Chinquapin (*Castanea pumila*)
- *Beech (*Fagus grandifolia*)
- White Oak (*Quercus alba*)
- *Northern Red Oak (*Quercus rubra* var. *borealis*)
- Scarlet Oak (*Quercus cocinea*)
- Spanish Oak, Southern Red Oak (*Quercus falcata*)
- *Blackjack Oak (*Quercus marilandica*)
- *Chestnut Oak (*Quercus prinus*)
- Post Oak (*Quercus stellata*)
- *Black Oak (*Quercus velutina*)

Ulmaceae:

- *American Elm (*Ulmus americana*)
- *Slippery Elm (*Ulmus rubra*)

Moraceae:

- *Red Mulberry (*Morus rubra*)

Menispermaceae:

- *Canada Moonseed (*Menispermum canadense*)

Magnoliaceae:

- *Tulip-tree (*Liriodendron tulipifera*)
- *Cucumber Magnolia (*Magnolia acuminata*)

Annonaceae:

- *Tall Pawpaw (*Asimina triloba*)

Lauraceae:

- *Common Spicebush (*Lindera benzoin* var. *benzoin*)
- *Sassafras (*Sassafras albidum*)

Saxifragaceae:

- *Wild Hydrangea (*Hydrangea arborescens*)

Hamamelidaceae:

- *Common Witch-hazel (*Hamamelis virginiana*)

Platanaceae:

- *Sycamore (*Platanus occidentalis*)

Rosaceae:

- *Downy Juneberry, Downy Serviceberry (*Amelanchier arborea*)
- *Hawthorn (*Crataegus* sp.)
- American Plum (*Prunus americana*)
- *Black Cherry (*Prunus serotina*)
- *Domesic Apple (*Pyrus malus*)
- *Black Chokeberry (*Pyrus melanocarpa*)
- Wild Rose (*Rosa carolina*)
- Swamp Rose (*Rosa palustris*)
- *Blackberry (*Rubus* sp.)
- *Wine Raspberry (*Rubus phoenicolasius*)
- *Black Raspberry (*Rubus occidentalis*)
- Southern Dewberry (*Rubus trivialis*)

Leguminosae:

- *Redbud (*Cercis canadensis*)
- *Black Locust (*Robinia pseudo-acacia*)
- **American Wisteria (*Wisteria frutescens*)

Mimosaceae:

- **Silktree, Mimosa (*Albizia julibrissin*)

Simaroubaceae:

- Tree-of-heaven (*Ailanthus altissima*)

Anacardiaceae:

- *Winged Sumac (*Rhus copallina*)
- *Smooth Sumac (*Rhus glabra*)
- *Poison-ivy (*Rhus radicans*)
- *Staghorn Sumac (*Rhus typhina*)

Aquifoliaceae:

- Deciduous Holly (*Ilex decidua*)
- Largeleaf Holly (*Ilex montana*)

Celastraceae:

- **American Bittersweet (*Celastrus scandens*)
- American Strawberry-bush (*Euonymus americanus*)

Aceraceae:

- *Ashleaf Maple, Box Elder (*Acer negundo*)
- Black Maple (*Acer nigrum*)
- *Red Maple (*Acer rubrum*)
- *Sugar Maple (*Acer saccharum*)

Hippocastanaceae:

- *Sweet Buckeye, Yellow Buckeye (*Aesculus octandra*)
- Red Buckeye (*Aesculus pavia*)

Rhamnaceae:

- New Jersey Tea (*Ceanothus americanus*)

Vitaceae:

- *Virginia Creeper (*Parthenocissus quinquefolia*)
- Possum Grape (*Vitis baileyana*)
- *Cat Grape (*Vitis palmata*)
- *Riverbank Grape (*Vitis riparia*)
- Sand Grape (*Vitis rupestris*)
- **Frost Grape (*Vitis vulpina*)

Tiliaceae:

- American Basswood (*Tilia americana*)
- White Basswood (*Tilia heterophylla*)

Cornaceae:

- *Flowering Dogwood (*Cornus florida*)

Nyssaceae:

- *Sour-gum (*Nyssa sylvatica*)

Ericaceae:

- *Mountain Laurel (*Kalmia latifolia*)
- Sourwood (*Oxydendrum arboreum*)
- **Smooth Azalea (*Rhododendron arborescens*)
- *Flame Azalea (*Rhododendron calendulaceum*)
- **Pink Azalea (*Rhododendron nudiflorum*)
- **Common Highbush Blueberry (*Vaccinium corymbosum*)
- Southern Gooseberry (*Vaccinium melanocarpum*)
- Deerberry (*Vaccinium neglectum*)
- Deerberry (*Vaccinium stamineum*)
- Slender Blueberry (*Vaccinium tenellum*)
- *Early Low Blueberry (*Vaccinium vacillans*)

Ebenaceae:

- Persimmon (*Diospyros virginiana*)

Oleaceae:

- *White Ash (*Fraxinus americana*)
- Biltmore Ash (*Fraxinus americana* var. *biltmoreana*)
- Red Ash (*Fraxinus pennsylvanica* var. *pennsylvanica*)
- Green Ash (*Fraxinus pennsylvanica* var. *subintegerrima*)
- **Common Privet (*Ligustrum vulgare*)

Solanaceae:

- **Chinese Matrimony-vine (*Lycium chinense*)

Scrophulariaceae:

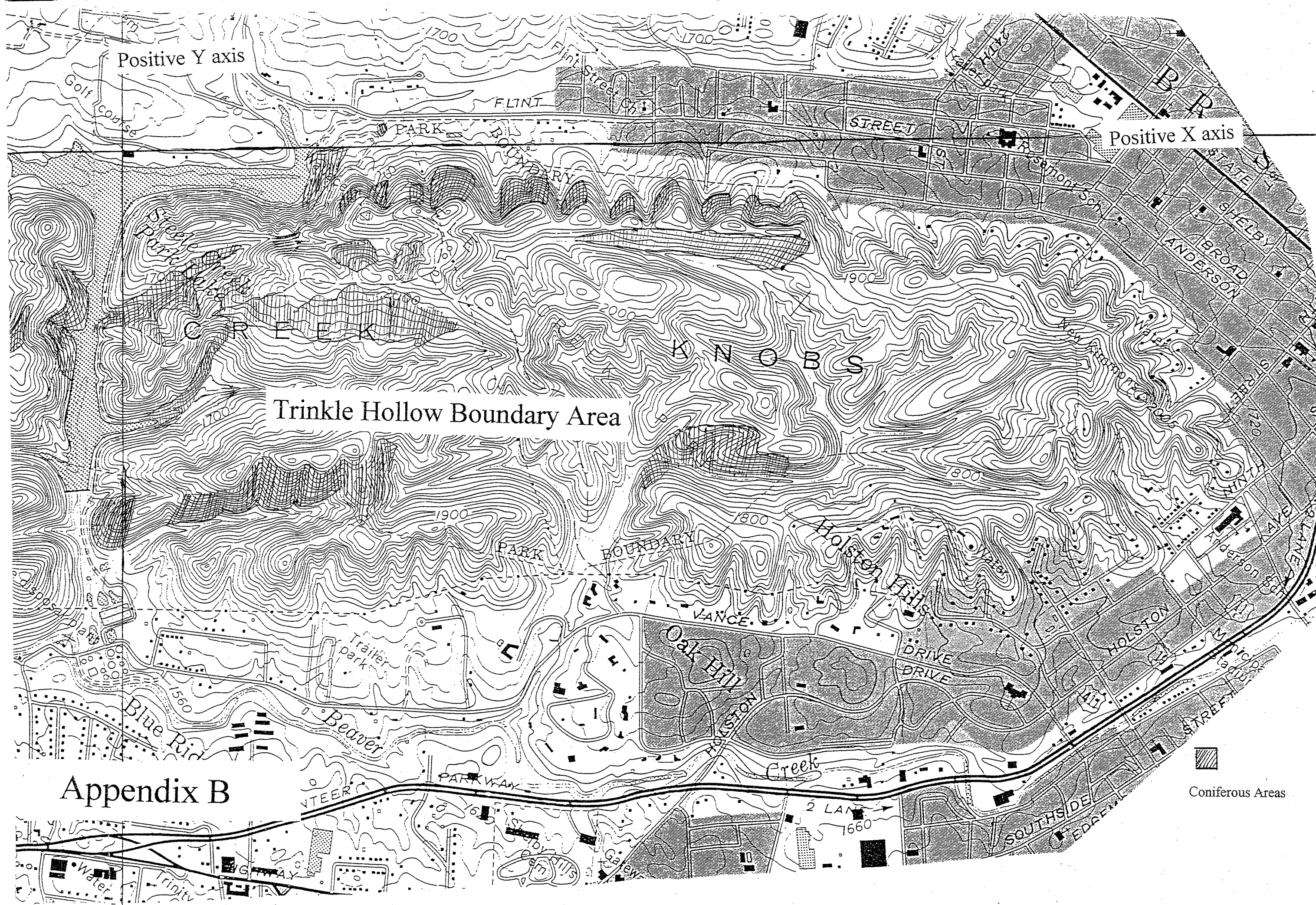
- **Princess-tree (*Paulownia tomentosa*)

Bignoniaceae:

- Cross Vine (*Bignonia capreolata*)
- Trumpet Creeper (*Campsis radicans*)
- **Common Catalpa (*Catalpa bignonioides*)

Caprifoliaceae:

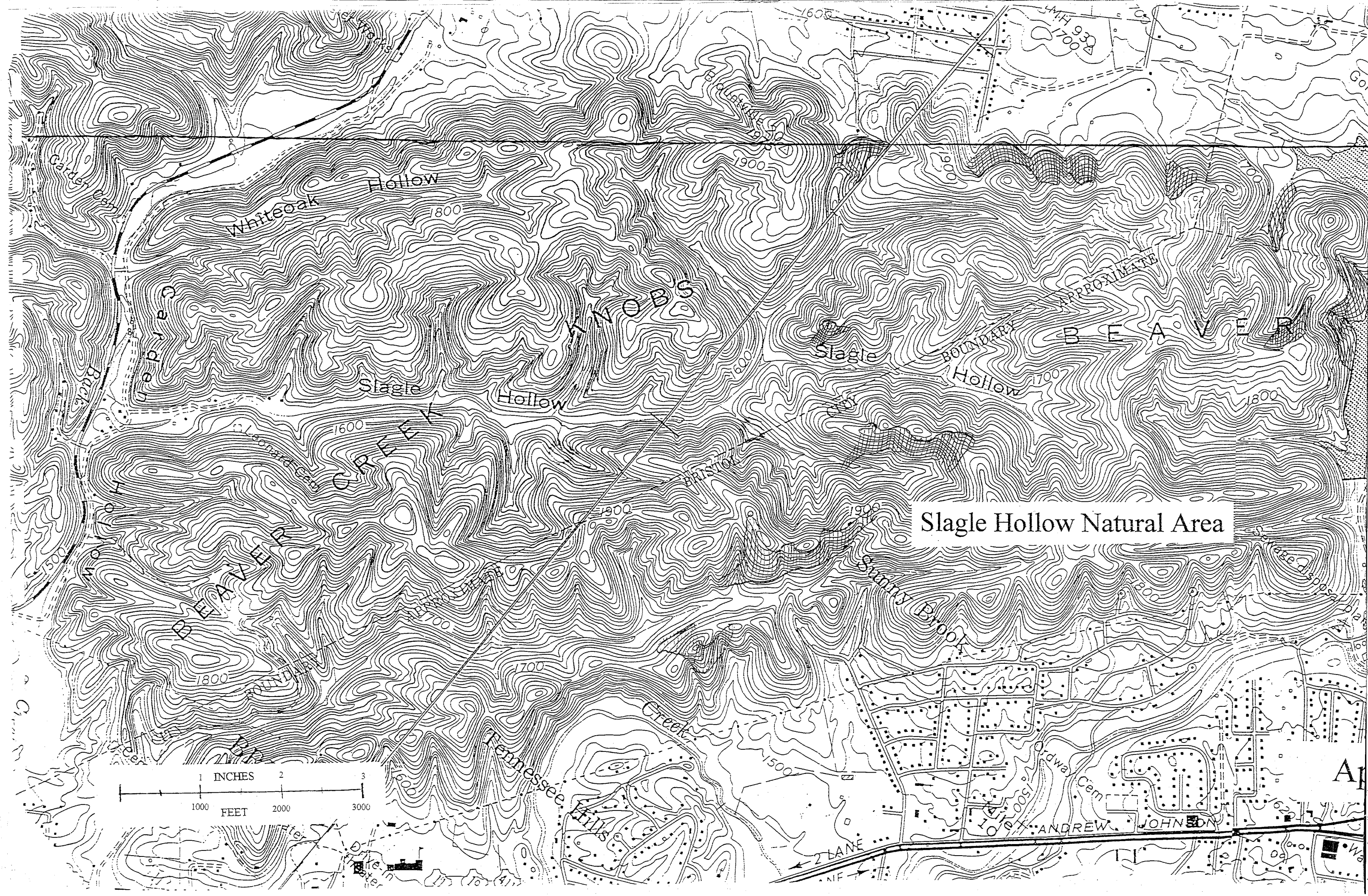
- Mountain Honeysuckle (*Lonicera dioica*)
- *Japanese Honeysuckle (*Lonicera japonica*)
- Trumpet Honeysuckle (*Lonicera sempervirens*)
- ?Dwarf Elder (*Sambucus ebulus*)
- *Common Elderberry (*Sambucus canadensis*)
- Coralberry (*Symphoricarpos orbiculatus*)
- *Mapleleaf Viburnum (*Viburnum acerifolium*)
- Smooth Blackhaw (*Viburnum prunifolium*)



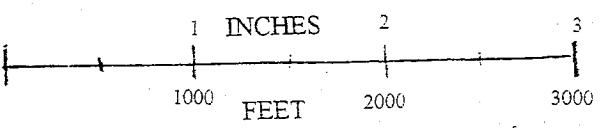
Trinkle Hollow Boundary Area

Appendix B

Coniferous Areas



Slagle Hollow Natural Area



Appendix C

Information on determining the stage of succession of a forest by graphing the dbh's of the trees in a size-class bar graph was taken from Andrew Jones' "Forest Ecology and Succession" (Spring 1996.) The three stages of succession correspond to three graph shapes. Figure 10 represents an early succession forest in which all of the trees are very small and no large trees are present. Therefore, the graph is a sharply descending line from left to right. Figure 12 represents a late-succession forest in which there is little or no undergrowth and the graph forms an inverted parabola. Mid-succession forests range between the two extremes with a descending line starting on the left but leveling out since a few mature trees do exist. The degree of succession of a mid-successional forest can tentatively be determined by the slope of the descending line and the dbh at which the line begins to descend sharply. Three stages of a mid-successional forest are illustrated in Figure 11.

Many other factors must also be taken into account as well when determining successional stage of a forest. For example, a coniferous area will often have very little undergrowth regardless of the stage of succession due to the acidity of the soil and poor growing conditions while a mid- to late succession alluvial hollow could have far more undergrowth than one would expect without taking the damp, rich soil into consideration. Finally, most of this area has been selectively logged and such logging or even natural treefall can cause a dip in the graph as is shown in Figure 13.

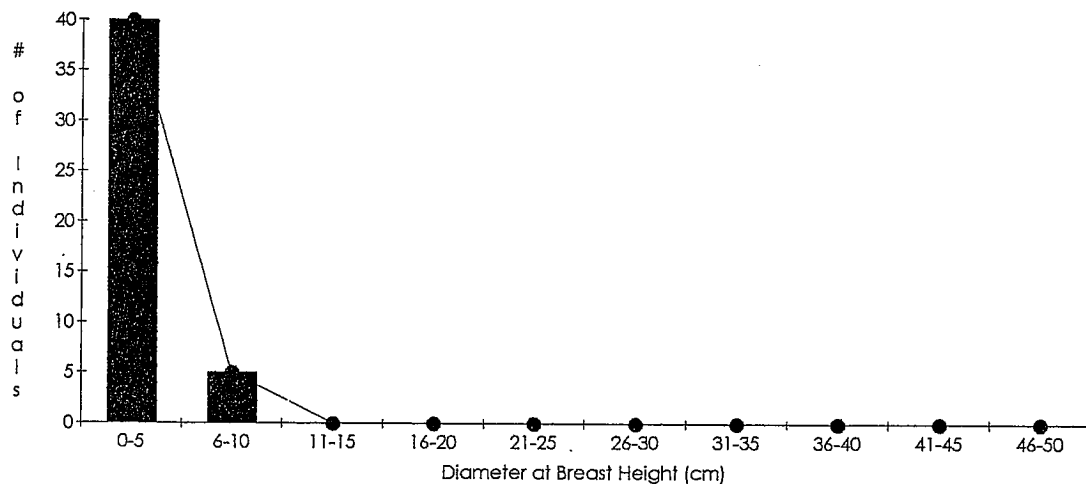


Figure 10: Diameters of Trees in an Early Succession Forest.

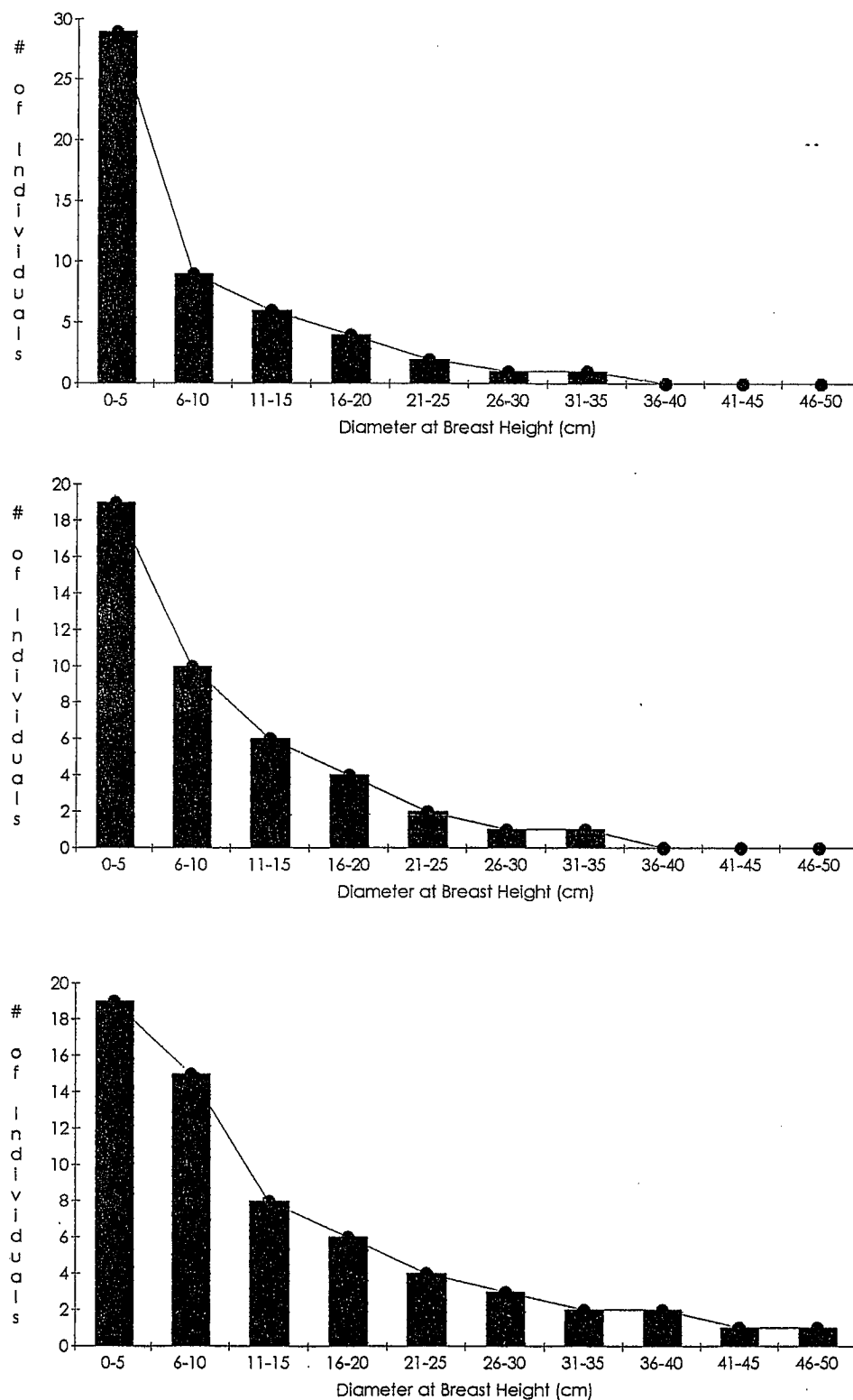


Figure 11: Three Possible Graphs of the Diameters of Trees in Mid-successional Forests

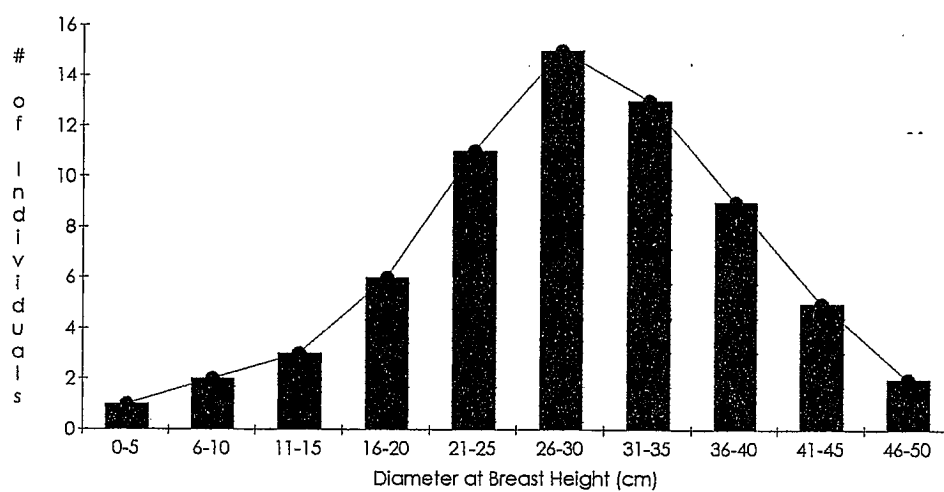


Figure 12: Diameter of Trees in a Late Succession Forest.

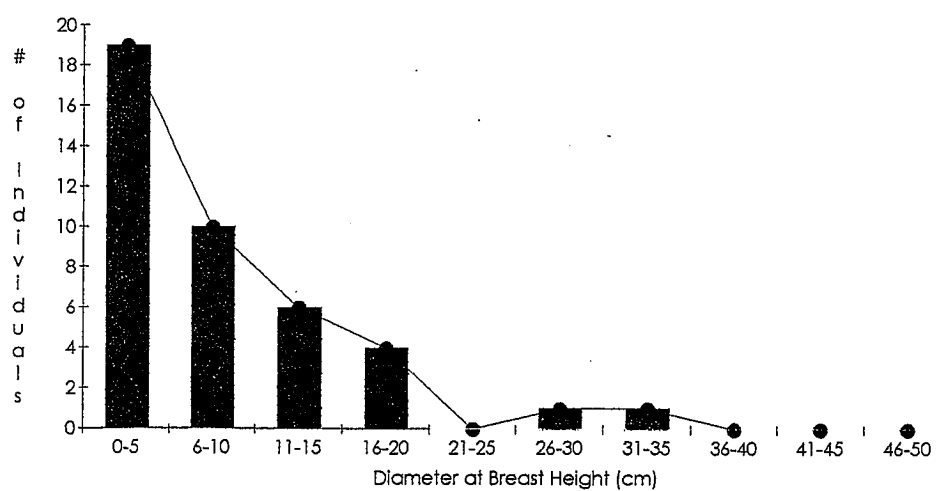


Figure 13: Diameter of Trees in a Mid-successional Forest Which Has Experienced a Disturbance.

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