

THE VASCULAR PLANT FLORA OF THE TENNESSEE RIVER
GARDENS AREA


by
Amanda Erin King

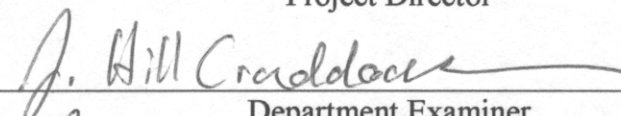
Departmental Honors Thesis
University of Tennessee at Chattanooga
Department of Biological and Environmental Sciences

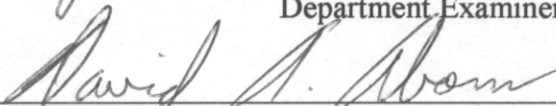
Project Director: Dr. Gene S. Van Horn
18 March 2003

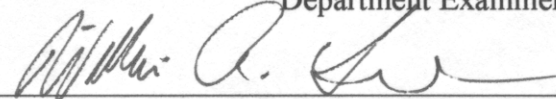
Dr. Gene Van Horn
Dr. David Aborn
Dr. Hill Craddock
Dr. William Lee

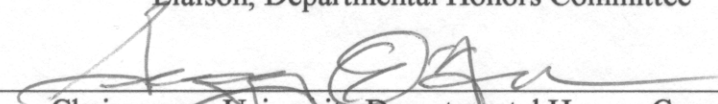
Examining Committee Signatures:


Project Director


Department Examiner


Department Examiner


Liaison, Departmental Honors Committee


Chairperson, University Departmental Honors Committee

ABSTRACT

The purpose of this project was to identify all native and introduced vascular plant species near the Tennessee River Gardens. The field work resulted in 355 specimens that represent 81 families, 190 genera, and 268 species. In addition to collecting and identifying, I also compared my flora with that of Lookout Mountain Park to determine the degree of similarity between the two sites which are both south of the Tennessee River. Another comparison was completed contrasting my flora with the flora of Chickamauga and Chattanooga National Military Park. The biotic similarity data I compiled are presented along with the biotic index utilized to compare the floras. My hypothesis is that the areas are not significantly different.

INTRODUCTION

The Tennessee River Gardens are located in Marion County, Tennessee. The study area is bordered by the Tennessee River on the west and Highway 41 on the southeast, see the map on page 46 for clarification. The approximate distance from the University of Tennessee at Chattanooga campus is 18 km (11 miles). The collection area covers 85 ha (210 acres) with an elevation range from 194 to 213 m (637 to 700 feet) above sea level. The study area is mainly composed of deciduous forest, but disturbed areas are present such as the site of an old limestone quarry. The study area also includes a lake and riparian habitat near springs, various creeks, and the Tennessee River. The species found in the wildflower garden located in the middle of the Tennessee River Gardens area were not collected because they were intentionally planted.



Looking at the area in front of the butterfly house, from upper level of the wildflower garden.



Looking down the main driveway.



Area in front of the butterfly house, near the fishing dock.



Looking toward the south end of the property, from the wildflower garden.



Looking north toward the wildflower garden, from the main driveway.



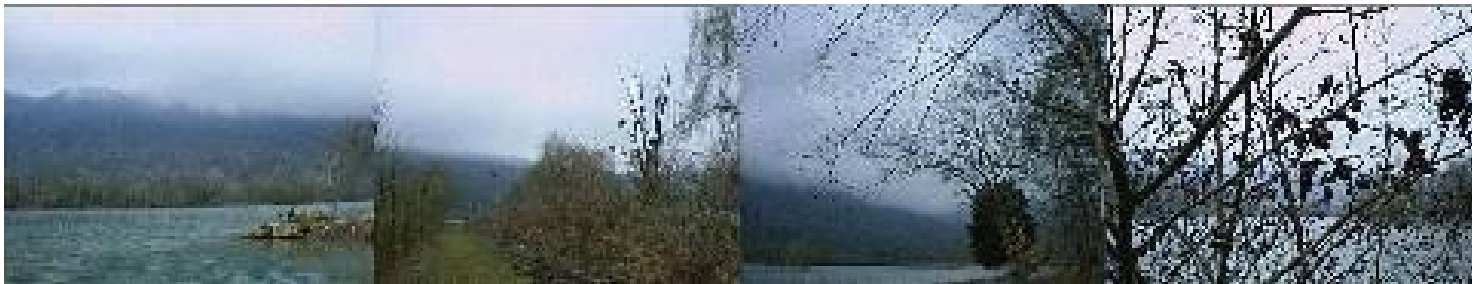
View from the wildflower garden toward the north end of the property.



Looking toward the south end of the property. The break in the trees is where the lake feeds into the Tennessee River. To the right of this is the River / Lake pathway. To the left you can see the golf course.



Quarry Site



The Lake

River / Lake Path

The Lake

Tennessee River

METHODS

I collected a total of 355 specimens of vascular plants from August 2001 to October 2002. During the fall months, I tried to make one collecting trip to the study site at least every two weeks, if not every week. I collected specimens only once a month in the winter months of November, December, and January because most plant species are dormant throughout this period. During the spring months of March, April, and May the maximum number of plant species are in bloom. The peak blooming period for the Chattanooga area is normally the middle of April. Therefore, during these months I collected plants at least once or twice a week at the Tennessee River Gardens.

My procedure for gathering plant specimens was to collect at a different location with varying soil types on each trip. The study area is elongated, making it easy to subdivide and make trips to each location, see Figure 7 on page 46. As I crisscrossed the various areas, I looked for environmental changes in soil type, depth of soil, wet and dry areas, and open regions. Environmental changes typically signal species changes. Using this technique, I was able to collect 268 vascular plant specimens. This pattern of collecting in all habitats was expected to result in a complete list of the vascular plant flora at the Tennessee River Gardens.

Specimens were collected by first placing them in a plastic bag with a number to correspond with the date and collecting site data in my field notebook. After I finished gathering specimens I would then place the plants in a herbarium press. The plants were placed in newspaper, labeled with their corresponding number, and then placed between blotters in the herbarium press. Identification of specimens was accomplished using a Leica GZ6 stereomicroscope and standard reference books (Carman, 2001; Cronquist, 1980; Gleason, 1963; Hitchcock and Chase, 1950; Isely, 1980; Mahler, 1970; Petrides, 1972; Petrides and Wehr, 1998; Radford, Ahles and Bell, 1971). To assist in determining common plant names I used information from *Plant Names: Scientific and Popular* (Lyons, 1900). The University of Tennessee at Chattanooga Herbarium was consulted for identification of some difficult specimens. The voucher specimens from my research are deposited in the Herbarium of the University of Tennessee at Chattanooga. If the proper scientific name was in question Kartesz and Kartesz (1980) was used as the final authority.

RESULTS

The flora has 81 families, 190 genera, and 268 species. Native species are most common (80 %), while 20 % of the species are introduced. To test

my hypothesis that the Tennessee River Gardens (TRG) flora was not significantly different from the flora of Lookout Mountain Park (LMP) and the flora of the Chickamauga and Chattanooga National Military Park (CCNMP), I used the Jaccard biotic index of similarity (Brown & Lomolino; 1998). If two identical floras were compared using a biotic index, the outcome would be a score of 1.00. Other biotic indices of similarity used to compare Prentice Cooper State Forest and Chickamauga and Chattanooga National Military Park had a score of 0.85 (Beck; 2000).

Jaccard Biotic Index

$$\frac{C}{N_1 + N_2 - C}$$

C = Present in both units

N₁ = Total present in first unit

N₂ = Total present in second unit

The first comparison between the Tennessee River Gardens' flora and the flora of Lookout Mountain was done using the vascular plant species present in both areas, and the species found only in each separate location. My hypothesis was that the areas were not significantly different. The biotic index was calculated to have a score of 0.51. This score illustrates that

approximately 82 % of the plant species at each location are the same. Figure 1 on page 17 illustrates the calculated results.

C = 160 = Plant species present at TRG and LMP
N₁ = 108 = Total plant species present only TRG
N₂ = 248 = Total plant species present only at LMP

$$\frac{C}{N_1 + N_2 - C}$$

$$160 / (108 + 248 - 160) = \mathbf{0.81633}$$

A comparison of the presence of native plants between the Tennessee River Gardens' flora and the vascular plants of Lookout Mountain Park was done using the native vascular plant species present in both areas, and the species found only at each site. Theoretically native plants should be well established in both areas, seeing as the plants have been here longer than introduced plant species. The biotic index for native vascular plants was determined to be 0.84. Figure 2 on page 18 displays the calculated results from the biotic index.

C = 134 = Native plant species present at TRG and LMP
 N₁ = 86 = Native total plant species present only TRG
 N₂ = 208 = Native total plant species present only at LMP

$$\frac{C}{N_1 + N_2 - C}$$

$$134 / (86 + 208 - 134) = \mathbf{0.8375}$$

Another biotic index was calculated using the introduced vascular plants present in the Tennessee River Gardens' flora compared to the introduced vascular plants of Lookout Mountain Park. The biotic index was determined to have a score of 0.72. Figure 3 on page 19 exhibits the calculated results from the biotic index.

C = 26 = Introduced plant species present at TRG and LMP
 N₁ = 22 = Introduced total plant species present only TRG
 N₂ = 40 = Introduced total plant species present only at LMP

$$\frac{C}{N_1 + N_2 - C}$$

$$26 / (22 + 40 - 26) = \mathbf{0.72222}$$

After reviewing the biotic index scores it is apparent that the Tennessee River Gardens' flora and the flora of Lookout Mountain Park are similar to the score, 0.80, determined by other biotic indices in John Beck's thesis. Also, the scores indicated that there were more native plants in common between the two floras compared to the introduced plant data compiled from the two floras. Although, mostly native wildflowers, there are some introduced and cultivated plants present in the garden area. During my research, I collected some of these escaped, non-native plant specimens in the woods surrounding the wildflower garden.

The next comparison, between the Tennessee River Gardens' flora and the flora of Chickamauga and Chattanooga National Military Park, was done using the vascular plant species present in both areas, and the species found only in each separate location. My hypothesis was that the areas were not significantly different. However, using the two floras the biotic index was calculated to have a score of 0.43. This score indicates that the two locations are much less similar than the biotic index of similarity score of 0.80 for Chickamauga and Chattanooga National Military Park and Prentice Cooper State Forest (Beck; 2000). Figure 4 on page 20 presents the calculated results from the biotic index.

C = 160 = Plant species present at TRG and CCNMP

N₁ = 108 = Total plant species present only TRG

N₂ = 425 = Total plant species present only at CCNMP

$$\frac{C}{N_1 + N_2 - C}$$

$$160 / (108 + 425 - 160) = \mathbf{0.42895}$$

A score of 0.43 indicates that there are more dissimilar species at each site than shared common species between each location. Different environmental types at each collection location could account for part of the reason that the floras vary. For example, cedar glades located within the Park are absent at the Tennessee River Gardens. The large difference in the total species collected at each site could also have affected the outcome. At the Tennessee River Gardens Area there were 268 species collected, whereas at the Chickamauga and Chattanooga National Military Park there was a total of 585 species. Furthermore, the Tennessee River Gardens site encompassed 85 ha whereas the total area studied for the flora of Chickamauga and Chattanooga National Military Park was 3,403 ha. The large variation in collection areas

could also have contributed to the score that indicated a lesser degree of similarity between floras than anticipated.

Although not included in the first proposal of this project, a biotic index of similarity was performed on the native and introduced plant species. A comparison of the presence of native plants between the Tennessee River Gardens' flora and the vascular plants of Chickamauga and Chattanooga National Military Park was done using the native vascular plant species present in both areas, and the species found only at each site. My hypothesis was that the biotic index for native vascular plants should indicate that the sites had more native plants present in common. Theoretically native plants should be well established in both areas, seeing as the plants have been here longer than introduced plant species. The biotic index for native vascular plants was calculated to have a score of 0.46. Figure 5 on page 21 illustrates the calculated results from the biotic index.

C = 134 = Native plant species present at TRG and CCNMP
 N₁ = 86 = Total native plant species present only at TRG
 N₂ = 342 = Total native plant species present only at CCNMP

$$\frac{C}{N_1 + N_2 - C}$$

$$134 / (86 + 342 - 134) = \mathbf{0.45578}$$

Another biotic index was calculated using the introduced vascular plants present in the Tennessee River Gardens' flora compared to the vascular plants of Chickamauga and Chattanooga National Military Park. The biotic index was determined to have a score of 0.33. The biotic index score implies that the two floras do not share a great similarity in the number of introduced plant species. Figure 6 on page 22 exhibits the calculated results from the biotic index.

C	=	26	=	Introduced plant species present at TRG and CCNMP
N ₁	=	22	=	Total introduced plant species present only at TRG
N ₂	=	83	=	Total introduced plant species present only at CCNMP

$$\frac{C}{N_1 + N_2 - C}$$

$$26 / (22 + 83 - 26) = \mathbf{0.32911}$$

Using the native and introduced vascular plant data, the biotic index scores again indicated a lesser degree of similarity between the Tennessee River Gardens' flora and the flora of Chickamauga and Chattanooga National Military Park. However, the scores did stipulate that there were more native

plants in common between the two floras compared to the introduced plant data compiled from the two floras.

Biotic Index of Similarity for the Tennessee River Gardens' (TRG) Flora and the Vascular Plants of Lookout Mountain Park (LMP)

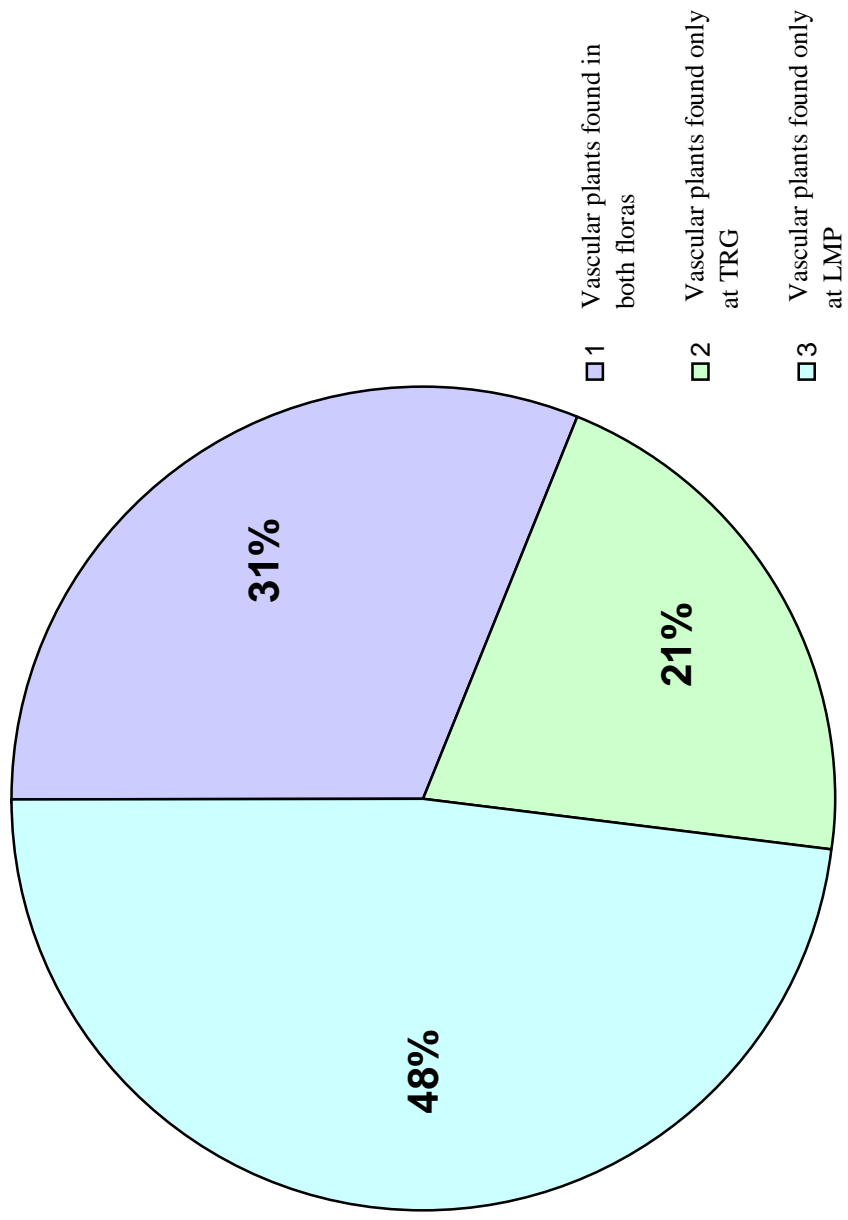


Figure 1

Biotic Index of Similarity for Native Vascular Plants at TRG and LMP

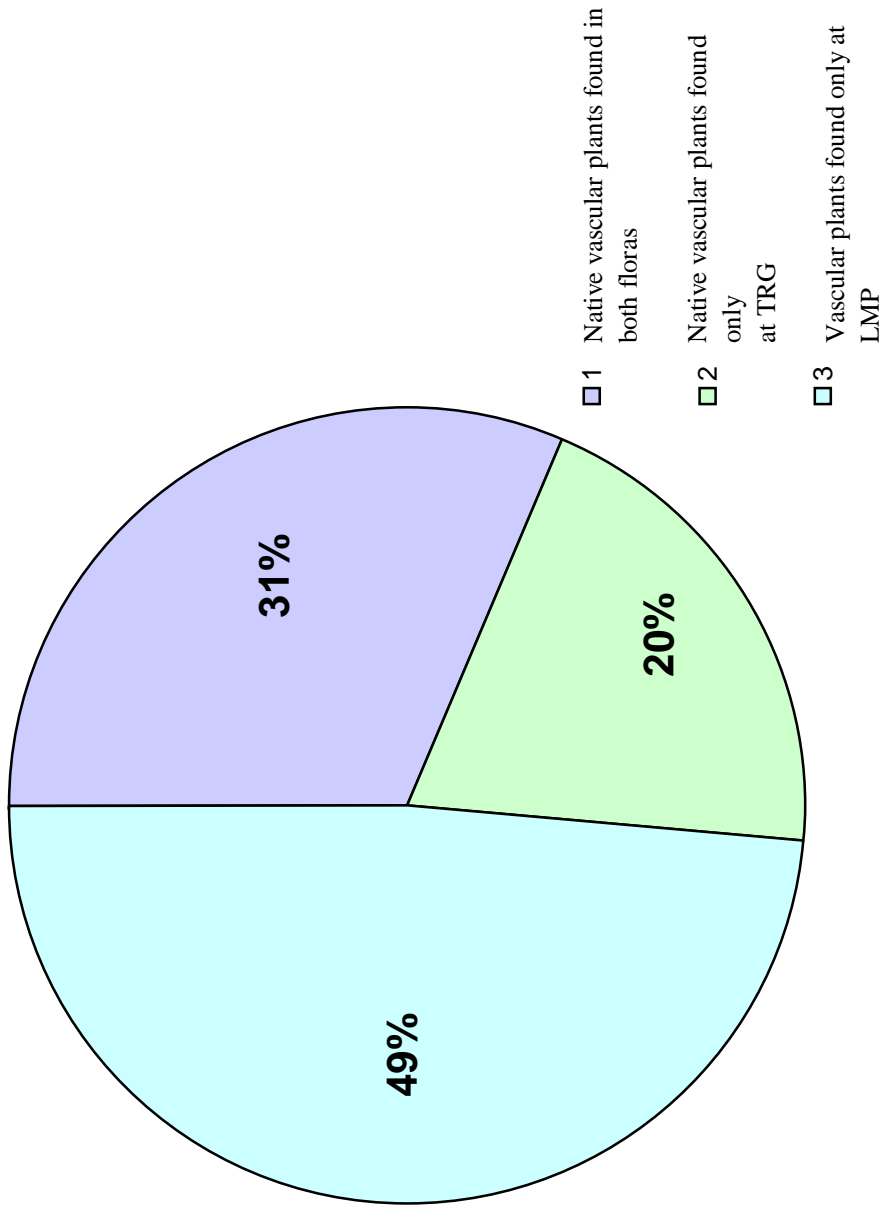


Figure 2

Biotic Index of Similarity of Introduced Vascular Plants at the TRG and LMP

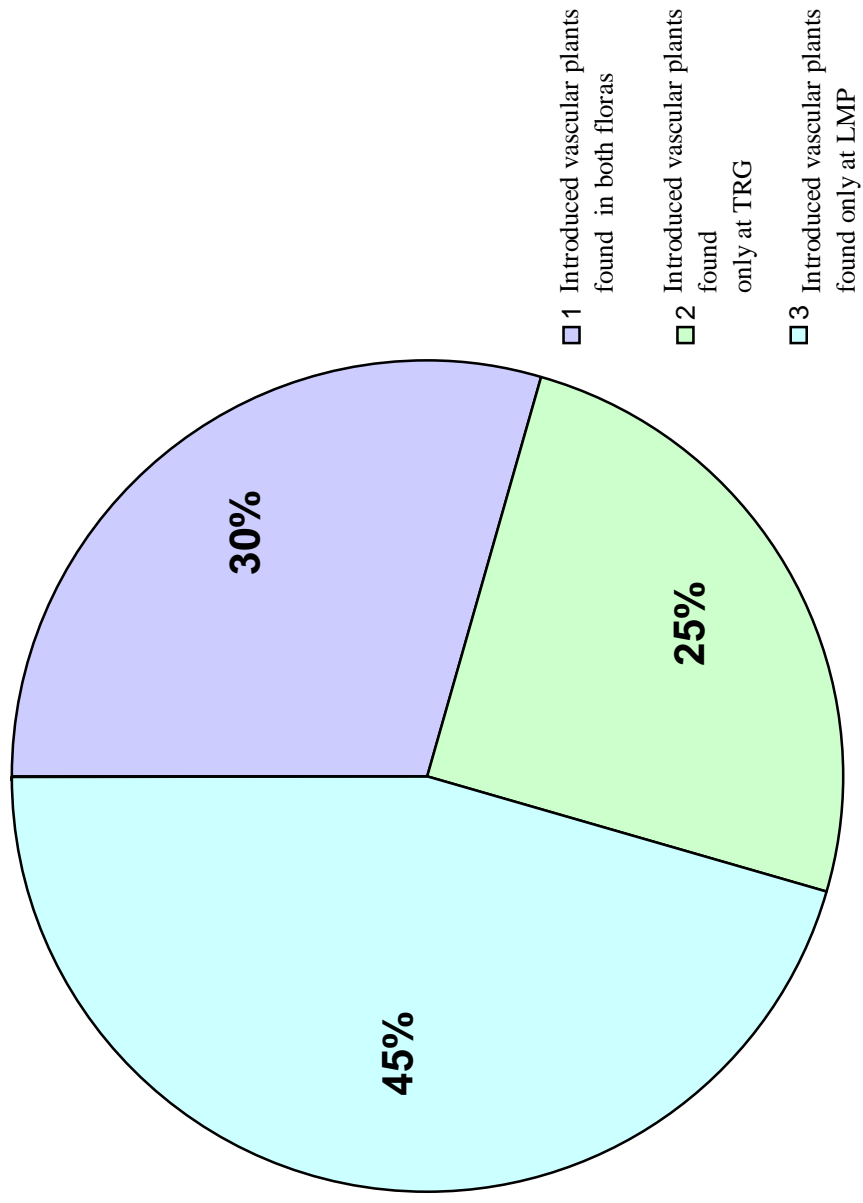


Figure 3

Biotic Index of Similarity for the Tennessee River Gardens' (TRG) Flora and the Vascular Plants of Chickamauga and Chattanooga National Military Park (CCNMP)

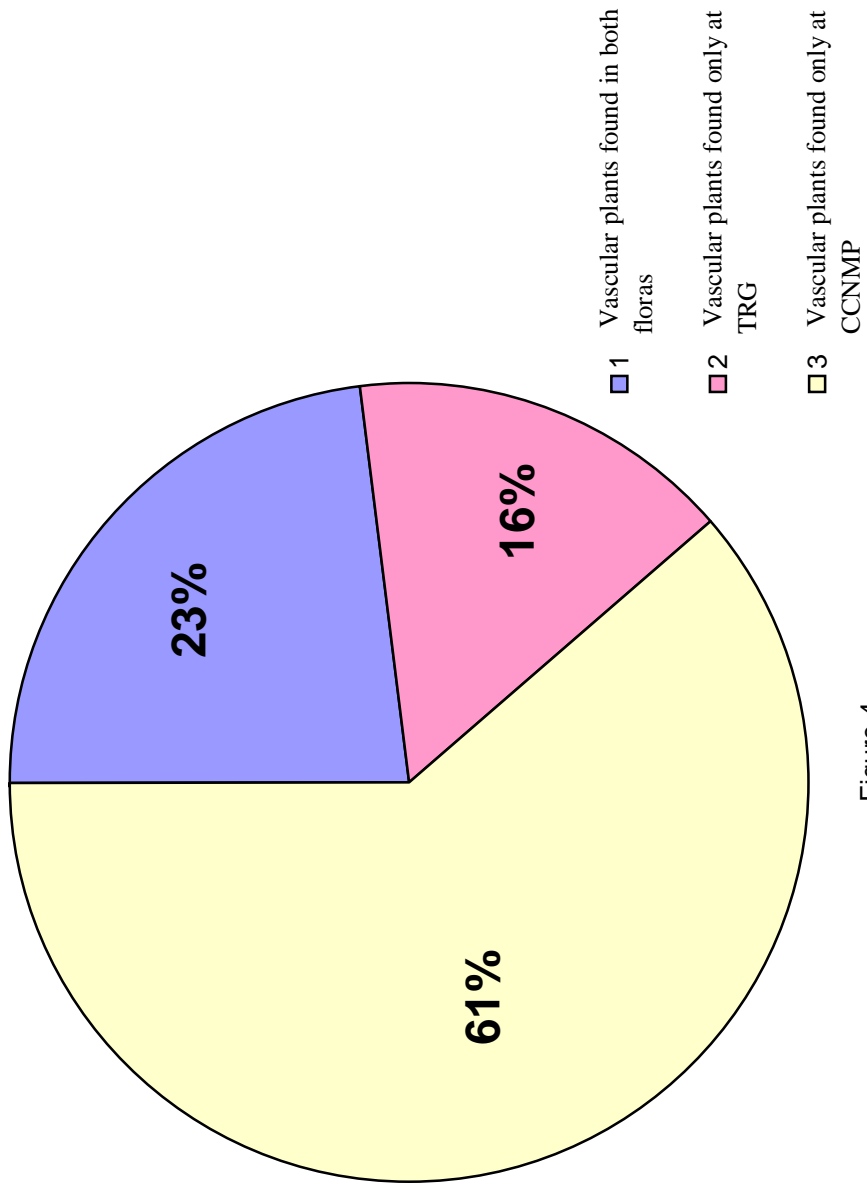


Figure 4

Biotic Index of Similarity for Native Vascular Plants at TRG and CCNMP

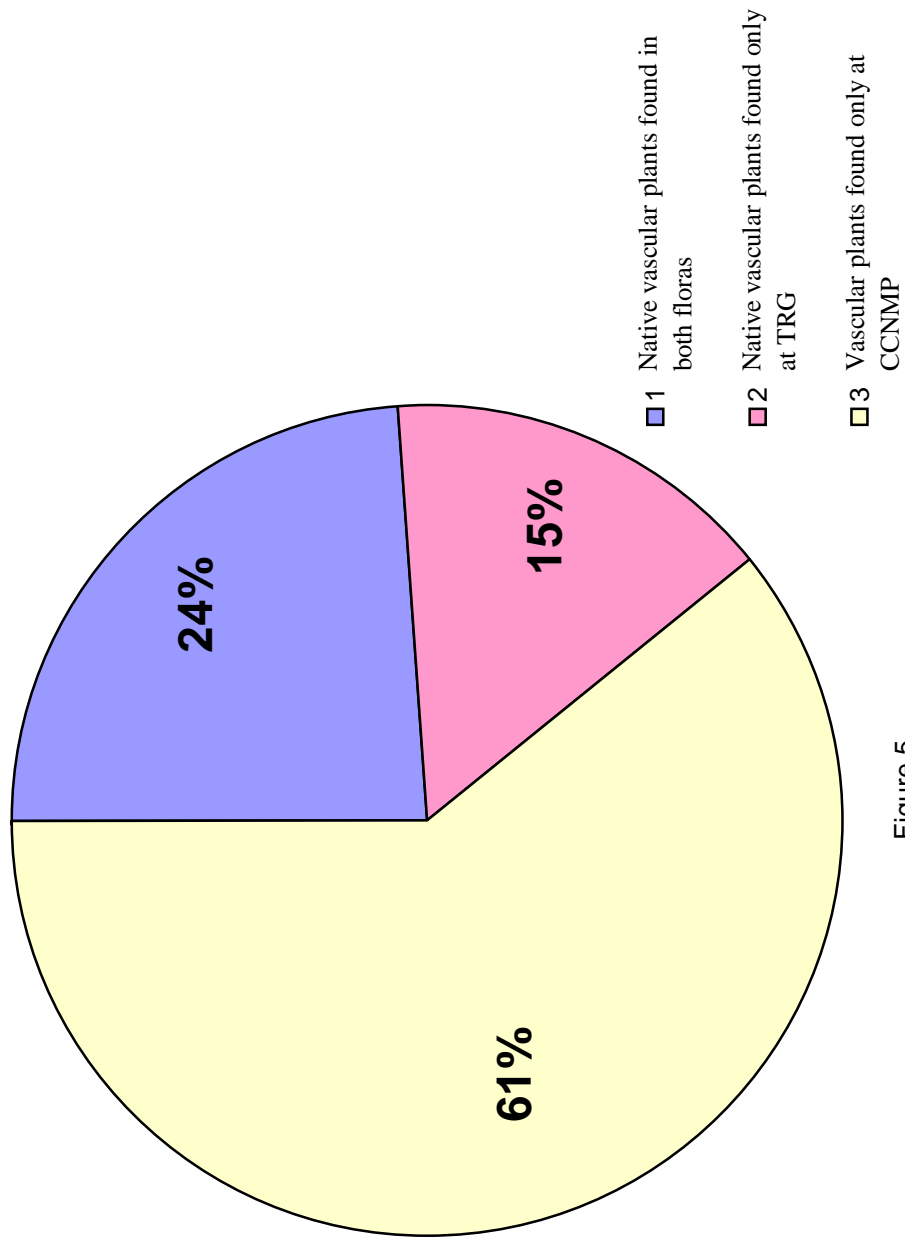


Figure 5

Biotic Index of Similarity of Introduced Vascular Plants at the TRG and CCNMP

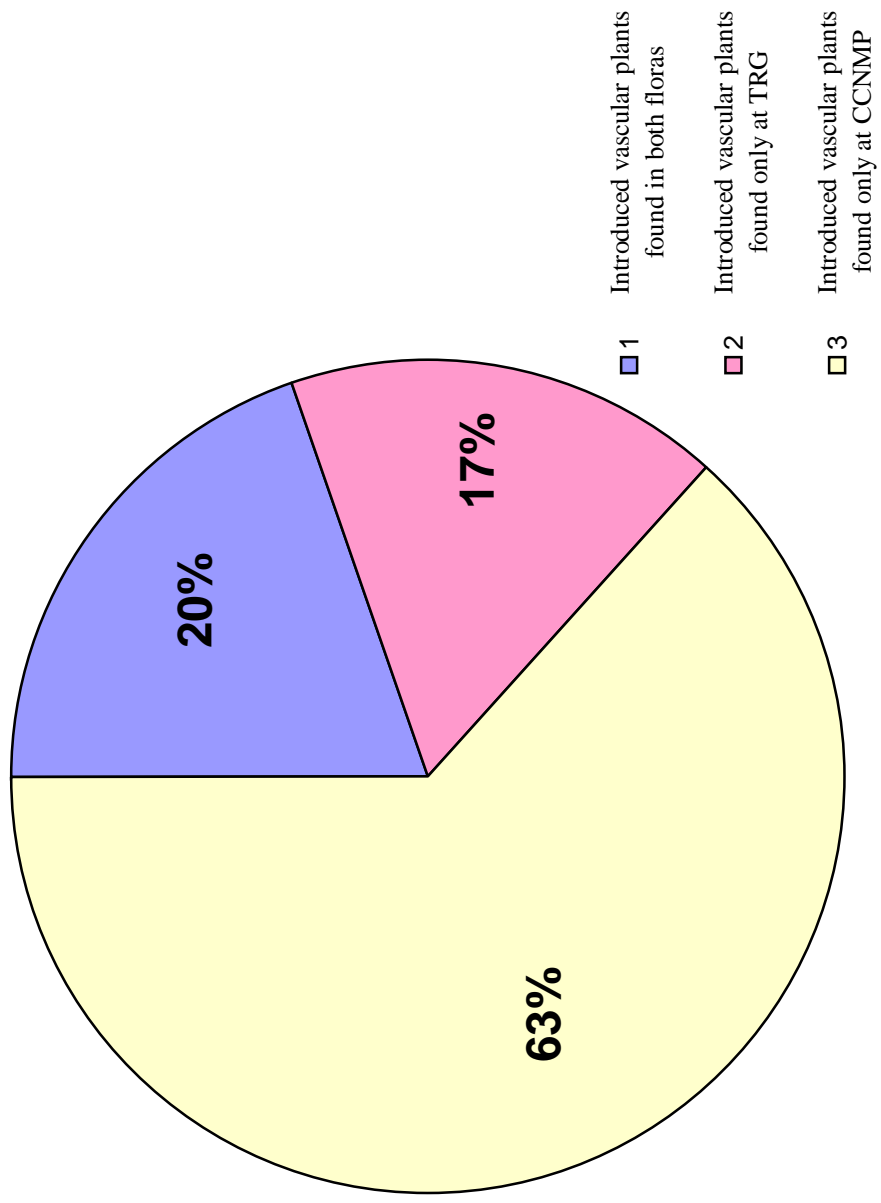


Figure 6

DISCUSSION

During my research, I greatly expanded my knowledge of vascular plants while also learning research procedures. My project was the first of its type in the Tennessee River Gardens. The information collected during the project lays the foundation for future research, possibly focusing on mammals or invasive plants. The latter studies are possible because a flora is always simply a “snapshot” in time. My study provides baseline data for future floristic studies.

At some stages in my research I encountered various problems. Many of these difficulties were related to my inexperience. As I progressed further with my study I gained knowledge that helped me to reduce dilemmas. For example, when I began collecting specimens I would sometimes forget to retrieve the basal leaves or roots of a plant. The basal leaves and roots are often necessary for identification of a specimen. A few experiences of attempting to key a plant specimen without the basal leaves or roots quickly taught me not to underestimate their importance. Furthermore, my first plant specimen collected from the lake remained fixed on the newspaper in my plant press. To solve this problem, I gained information on correctly pressing and drying wet specimens from *Managing the Modern Herbarium* (Metsger and

Byers, 1999). Using this knowledge, I was able to properly collect and dry aquatic specimens.

FUTURE ENDEAVORS

The Tennessee River Gardens flora, being the first analysis of the vascular plants at the Tennessee, constitutes a baseline study. A baseline study creates the opportunity for numerous future educational ventures. At the Tennessee River Gardens, a future study could be executed focusing on the recently introduced vascular plants in the area. In order to undertake this project, one would have to study the area for a number of years to collect data on the increasing or decreasing presence of introduced plants. This study of non-native plants could be expanded to include the effects of introduced plants on native vascular plants or the surrounding natural habitat. In 2002, a study examining the effects of a non-native plant, Chinese Privet (*Ligustrum sinense* Lour.), on the nutrients of the forest soil at the Tennessee River Gorge illustrates a viable opportunity that could be implemented at the Tennessee River Gardens (Spratt and Huntley, 2002).

LIST OF TAXA

The list of taxa represents the identified specimens collected at the Tennessee River Garden. The list is divided into four major headings: Pteridophyta, Gymnospermae, Monocotyledonae, and Dicotyledonae. Under each heading are the family names listed alphabetically. The genus and species of each specimen are alphabetically listed after each corresponding family along with the author of each species. Common names are noted when present in the reference books. Before each species is the letter “N” for native species and “I” for introduced species.

THE VASCULAR PLANT FLORA OF THE TENNESSEE RIVER
GARDENS AREA

PTERIDOPHYTA

ASPIDIACEAE

- N *Polystichum acrostichoides* (Michx.) Schott Christmas Fern

ASPLENIACEAE

- N *Asplenium platyneuron* (L.) Oakes ex D.C. Eat. Ebony Spleenwort

AZOLLACEAE

- N *Azolla caroliniana* Willd. Mosquito Fern

OPHIOGLOSSACEAE

- N *Botrychium virginianum* (L.) Sw. Rattlesnake Fern

OSMUNDACEAE

- N *Osmunda cinnamomea* L. Cinnamon Fern

POLYPODIACEAE

- N *Polypodium polypodioides* (L.) Watt Resurrection Fern
Gray Polypodium

GYMNOSPERMAE

CUPRESSACEAE

- | | |
|----------------------------------|---------------------|
| N <i>Juniperus virginiana</i> L. | Red Cedar |
| N <i>Thuja occidentalis</i> L. | Eastern White Cedar |

PINACEAE

- | | |
|--------------------------------------|-----------------|
| N <i>Pinus echinata</i> P. Mill. | Short-leaf Pine |
| N <i>P. strobus</i> L. | White Pine |
| N <i>P. virginiana</i> P. Mill. | Scrub Pine |
| N <i>Tsuga canadensis</i> (L.) Carr. | Eastern Hemlock |

TAXODIACEAE

- | | |
|--|------------------------------|
| N <i>Taxodium distichum</i> L.C. Rich. | Baldcypress
Swamp Cypress |
|--|------------------------------|

MONOCOTYLEDONAE

AMARYLLIDACEAE

- | | |
|---------------------------------------|-------------------|
| N <i>Hypoxis hirsuta</i> (L.) Coville | Yellow Star Grass |
|---------------------------------------|-------------------|

CYPERACEAE

N *Cyperus lancastricensis* Porter

N *C. strigosus* L.

False Nutsedge

IRIDACEAE

N *Sisyrinchium angustifolium* P. Mill.

Pale Blue-Eyed Grass

JUNCACEAE

N *Luzula echinata* F.J. Herm.

Woodrush

N *Juncus coriaceus* Mackenzie

Rush

LILLIACEAE

I *Allium vineale* L.

Field Garlic

N *Polygonatum biflorum* (Walt.) Ell.

Smooth Solomon's Seal

N *Smilacina racemosa* (L.) Desf.

Solomon's Plume
False Solomon's Seal

N *Smilax laurifolia* L.

Greenbriar

N *S. rotundifolia* L.

Greenbriar, Catbrier

N *S. walteri* Pursh

Redberry Greenbriar

N *Trillium cuneatum* var. *cuneatum* Raf.

Sweet Little Betsy

N *T. lancifolium* Raf.

Lanceleaf Trillium

N *Uvularia perfoliata* L.

Bellwort

POACEAE

N	<i>Andropogon virginicus</i> L. var. <i>glucopsis</i> (Ell.) A.S. Hitchc.	Broom Sedge
N	<i>Arundinaria gigantea</i> (Walt.) Muhl.	Giant Cane
N	<i>Brachyelytrum erectum</i> (Schreb.) Beauv.	
N	<i>Digitaria ischaemum</i> (Schreb. ex Schweig)) Schreb. ex Muhl.	Smooth Crab Grass
I	<i>Eleusine indica</i> (L.) Gaertn.	Yard Grass
		Goose Grass
N	<i>Elymus virginicus</i> L.	Virginia Wild-Rye
N	<i>Erianthus alopecuroides</i> (L.) Ell.	Silver Plume Grass
N	<i>Muhlenbergia sobolifera</i> (Muhl.) Trin.	
N	<i>M. sobolifera</i> (Muhl.) Trin. var. <i>setigera</i> Scribn.	
N	<i>Panicum dichotomiflorum</i> Michx.	Fall Panicum
N	<i>P. gattingeri</i> Nash	Panic Grass
N	<i>P. virgatum</i> L.	Switch Grass
N	<i>Paspalum ciliatifolium</i> Michx.	
I	<i>P. dilatatum</i> Poir.	Dallis Grass
N	<i>P. pubiflorum</i> Rupr.	
N	<i>Setaria geniculata</i> (Lam.) Beauv.	Knotroot, Bristle Grass
I	<i>S. italica</i> (L.) Beauv.	Millet
I	<i>Sorghum halepense</i> (L.) Pers.	Johnson Grass
I	<i>Sporobolus vaginiflorus</i> (Torr. ex Gray) Wood	Dropseed
N	<i>Triodia flava</i> (L.) Hitchcock	Tall Redtop, Purpletop

TYPHACEAE

N *Typha latifolia* L. Common Cattail

DICOTYLEDONAE

ACANTHACEAE

N *Ruellia caroliniensis* (J.F. Gmel.) Steud. Carolina Wild Petunia

ACERACEAE

N *Acer negundo* L. Box Elder
Ash-Leaved Maple

N *A. rubrum* L. Red Maple

N *A. saccharinum* L. Silver Maple

AMARANTHACEAE

I *Alternanthera philoxeroides* (Mart.) Griseb. Alligator Weed

ANACARDIACEAE

N *Rhus glabra* L. Smooth Sumac

N *R. radicans* L. Poison Ivy

APIACEAE

N <i>Cicuta maculata</i> L.	Spotted Cowbane Water Hemlock
I <i>Daucus carota</i> L.	Wild Carrot Queen Anne's Lace
N <i>Sanicula smallii</i> Bickn.	Snakeroot
N <i>Thaspium trifoliatum</i> (L.) Gray	Smooth Meadow Parsnip

APOCYNACEAE

I <i>Vinca minor</i> L.	Periwinkle
-------------------------	------------

ARISTOLOCIACEAE

N <i>Hexastylis arifolia</i> (Michx.) Small	Little Brown Jug
---	------------------

ASCLEPIADACEAE

N <i>Asclepias variegata</i> L.	White Milkweed Variegated Milkweed
---------------------------------	---------------------------------------

ASTERACEAE

N <i>Ageratina altissima</i> (L.) King & H. Robinson	White Snakeroot
N <i>Antennaria plantaginifolia</i> (L.) Richards.	Plantain-Leaf Pussytoes
N <i>Aster laevis</i> L.	Smooth Aster
N <i>A. novae-angliae</i> L.	New England Aster
N <i>A. pilosus</i> Willd.	Frost Aster

N <i>A. pilosus</i> Willd. var <i>pilosus</i>	Frost Aster
N <i>A. simplex</i> Willd.	
N <i>Boltonia asteroides</i> (L.) L' Her.	False Aster
I <i>Chrysanthemum leucanthemum</i> L.	Oxeye Daisy
N <i>Cirsium discolor</i> (Muhl. ex Willd.) Spreng.	Field Thistle
N <i>Coreopsis angustifolia</i> Aiton	
N <i>C. auriculata</i> L.	Lobed Tickseed
N <i>C. lanceolata</i> L.	Lance-Leaf Coreopsis
N <i>Desmodium paniculatum</i> (L.) D.C.	Panicled Tick Trefoil
N <i>Elephantopus carolinianus</i> Raeusch.	Elephant's Foot
N <i>Erigeron philadelphicus</i> L.	Common Fleabane Philadelphia Fleabane
N <i>E. pulchellus</i> Michx.	Robin's Plantain
N <i>E. strigosus</i> Muhl. ex Willd.	Daisy Fleabane
N <i>E. vernus</i> (L.) Torr. & Gray	
N <i>Eupatorium aromaticum</i> L.	Thoroughwort
N <i>E. coelestinum</i> L.	Mistflower, Ageratum
N <i>E. dubium</i> Willd. ex Poir.	
N <i>E. serotinum</i> Michx.	Thoroughwort
N <i>Helianthus annuus</i> L.	Common Sunflower
N <i>H. hirsutus</i> Raf.	Sunflower
N <i>H. microcephalus</i> Torr. & Gray	Small-Headed Sunflower
N <i>H. strumosus</i> L.	Pale-Leaf Wood

	Sunflower
N <i>Heterotheca pilosa</i> (Nuttall) Shinnars	Hairy Golden Aster
N <i>Lactuca floridana</i> (L.) Gaertn.	Wild Lettuce
N <i>Parthenium integrifolium</i> L.	Wild Quinine
N <i>Polymnia uvedalia</i> L.	Bearsfoot
N <i>Rudbeckia fulgida</i> Ait.	Orange Coneflower
N <i>R. hirta</i> L.	Black-Eyed Susan
N <i>Senecio glabellus</i> Poir.	Butterweed
N <i>Silphium terebinthinaceum</i> Jacq.	Rosin Weed
N <i>Solidago bicolor</i> L.	White Goldenrod
N <i>S. curtisii</i> Torr. & Gray	Blue-stem Goldenrod
N <i>S. erecta</i> Pursh.	Goldenrod
N <i>S. gigantea</i> Ait.	Goldenrod
N <i>S. odora</i> Ait.	Goldenrod
N <i>S. petiolaris</i> Ait.	Goldenrod
N <i>S. roanensis</i> Porter	Goldenrod
I <i>Taraxacum officinale</i> Weber	Common Dandelion
N <i>Verbesina encelioides</i> (Cav.) Benth. & Hook. f ex Gray	
N <i>V. occidentalis</i> (L.) Walt.	Yellow Crownbeard
N <i>V. virginica</i> L. var. <i>laciniata</i> (Poir.) Gray	White Crownbeard Frostweed
N <i>Vernonia altissima</i> Nuttall	Ironweed
N <i>V. gigantea</i> (Walter) Trel. ex Branner & Coville	Tall Ironweed

BALSAMINACEAE

- N *Impatiens capensis* Meerb. Spotted Touch-Me-Not
Jewel-weed

BERBERIDACEAE

- N *Podophyllum peltatum* L. Mayapple

BETULACEAE

- N *Alnus serrulata* (Ait.) Willd. Smooth Alder, Tag Alder
N *Betula lutea* Michaux f. Yellow Birch

BIGONIACEAE

- N *Anisostichus capreolata* (L.) Bureau Cross Vine
N *Campsis radicans* (L.) Seem. ex Bureau Trumpet Vine
Cow-Itch Vine

BORAGINACEAE

- N *Lithospermum caroliniense* (J.F. Gmel.) MacM. Puccoon
I *Myosotis arvensis* (L.) Hill

BRASSICACEAE

- I *Cardamine hirsuta* L. Hoary Bittercress
I *Hesperis matronalis* L. Dame's Rocket

CALYCANTHACEAE

N *Calycanthus floridus* L. Sweet Shrub

CAMPANULACEAE

N *Lobelia elongata* Small

N *L. puberula* Michx. Downy Lobelia

N *Triodanis perfoliata* (L.) Nieuwl. Venus' Looking Glass

CAPRIFOLIACEAE

I *Lonicera fragrantissima* Lindl. & Paxton Sweet Breath of Spring

I *L. japonica* Thunb. Japanese Honeysuckle

I *L. xylosteum* L. European Honeysuckle

N *Sambucus canadensis* L. Elderberry

CARYOPHYLLACEAE

I *Cerastium glomeratum* Thuill.

N *Silene virginica* L. Fire Pink

I *Stellaria media* (L.) Vill. Chickweed

CELASTRACEAE

N *Euonymus americanus* L. Strawberry Bush

CONVOLVULACEAE

N or I <i>Calystegia sepium</i> (L.) R. Br.	Hedge Bindweed
N <i>Cuscuta gronovii</i> Willd.	Common Dodder Love Vine

CORNACEAE

N <i>Cornus florida</i> L.	Dogwood
----------------------------	---------

CRASSULACEAE

N <i>Sedum pulchellum</i> Michx.	Widow's Cross
----------------------------------	---------------

DIOSCOREACEAE

N <i>Dioscorea villosa</i> L.	Wild Yam
-------------------------------	----------

EBENACEAE

N <i>Diospyros virginiana</i> L.	Persimmon
----------------------------------	-----------

ERICACEAE

N <i>Chimaphila maculata</i> (L.) Pursh	Spotted Wintergreen, Pipsissewa
N <i>Kalmia latifolia</i> L.	Mountain Laurel

EUPHORBIACEAE

N <i>Euphorbia corollata</i> L.	Flowering Spurge
N <i>E. maculata</i> L.	Spurge
N <i>E. mercurialina</i> Michx.	Cumberland Spurge
N <i>E. supina</i> Raf.	Spurge

FABACEAE

I <i>Albizia julibrissin</i> Durz.	Mimosa
N <i>Cassia nictitans</i> L.	Wild sensitive plant
N <i>Centrosema virginianum</i> (L.) Benth.	Climbing Butterfly Pea
N <i>Cercis canadensis</i> L.	Eastern Red Bud Judas Tree
N <i>Chamaecrista fasciculata</i> (Michaux) Greene	Partridge Pea
I <i>Coronilla varia</i> L.	Crown Vetch
N <i>Desmodium nudiflorum</i> (L.) DC.	Naked-Flowered Tick Trefoil
N <i>D. perplexum</i> Schub	
N <i>Gleditsia triacanthos</i> L.	Honey Locust
I <i>Lathyrus latifolius</i> L.	Everlasting Pea
I <i>Lespedeza cuneata</i> (Dum. - Cours.) G. Don	Sericea Lespedeza
I <i>Melilotus alba</i> Medic.	White Sweet Clover
I <i>Paulownia tomentosa</i> (Thunberg) Steudel	Princess Tree
N <i>Phaseolus polystachyus</i> (L.) B.S.P.	Wild Bean

N	<i>Psoralea subacaulis</i> Torr. & Gray	Nashville Breadroot
N	<i>Robinia pseudo-acacia</i> L.	Black Locust
N	<i>Schrankia microphylla</i> (Dry.) J.F. Macbr.	Sensitive Brier
N	<i>Stylosanthes biflora</i> (L.) B.S.P.	Pencil flower
I	<i>Trifolium campestre</i> Schreb.	Low Hop Trefoil
I	<i>T. pratense</i> L.	Red Clover
I	<i>T. repens</i> L.	White Clover
I	<i>Vicia angustifolia</i> Reichard	Vetch
I	<i>Wisteria floribunda</i> (Willd.) DC.	Wisteria

FAGACEAE

N	<i>Fagus grandifolia</i> Ehrh.	Beech
N	<i>Quercus alba</i> L.	Eastern White Oak
N	<i>Q. falcata</i> Michx.	Southern Oak Spanish Oak
N	<i>Q. marilandica</i> Muenchh.	Blackjack Oak
N	<i>Q. muehlenbergii</i> Englem.	Chinaquapin Oak
N	<i>Q. rubra</i> L.	Red Oak
N	<i>Q. velutina</i> Lam.	Eastern Black Oak

GENTIACEAE

N	<i>Obolaria virginica</i> L.	Pennywort
---	------------------------------	-----------

GERANIACEAE

I *Geranium columbinum* L.

I *G. dissectum* L.

Cranesbill

N *G. maculatum* L.

Wild Geranium

HALORAGIDACEAE

N *Myriophyllum pinnatum* (Walt.) B.S.P.

Milfoil

HAMAMELIDACEAE

N *Liquidambar styraciflua* L.

Sweetgum

HYPERICACEAE

N *Hypericum hypericoides* (L.) Crantz

St. Andrew's Cross

N *H. stans* (Michaux) P. Adams & Robson

St. Peterswort

JUGLANDACEAE

N *Carya glabra* (P. Mill.) Sweet

Pignut Hickory

N *C. ovata* (P. Mill.) K. Koch

Shagbark Hickory

N *C. pallida* (Ashe) Engl. & Graebn.

Pale Hickory

N *C. tomentosa* (Poir.) Nutt.

Mockernut Hickory

LAMIACEAE

N	<i>Collinsonia tuberosa</i> Michx.	Horse-bit, Stone-root
I	<i>Lamium amplexicaule</i> L.	Henbit
I	<i>Mentha spicata</i> L.	Spearmint
N	<i>Monarda bradburiana</i> Beck	Horse Mint Wild Bergamot
I	<i>Perilla frutescens</i> (L.) Britt.	
N	<i>Prunella vulgaris</i> L.	Heal All
N	<i>Pycnanthemum icanum</i> (L.) Michx.	Hoary Mountain Mint
I	<i>Salvia coccinea</i> Juss. ex J. Murr	Texas Sage
N	<i>S. lyrata</i> L.	Lyre-Leaf Sage
N	<i>S. urticifolia</i> L.	Nettle-Leaf Sage
N	<i>Scutellaria montana</i> Chapman	Large-Flowered Skullcap

LAURACEAE

N	<i>Sassafras albidum</i> (Nutt.) Nees	Sassafras
---	---------------------------------------	-----------

LOGANIACEAE

I	<i>Buddleia davidi</i> Franch.	Butterfly Bush
N	<i>Spigelia marilandica</i> L.	Indian Pink

LORANTHACEAE

N *Phoradendron serotinum* (Raf.) M.C. Johnston Mistletoe

MAGNOLIACEAE

N *Liriodendron tulipifera* L. Tulip Tree

MALVACEAE

N *Hibiscus militaris* Cav. Halberd-leaved Marsh Mallow

N *H. moscheutos* L. Swamp Rose Mallow

MORACEAE

N *Morus rubra* L. Red Mulberry

NAJADACEAE

I *Najas minor* All. Spiny Niad

OLEACEAE

N *Fraxinus americana* L. White Ash

N *F. Americana* var. *biltmoreana* (Beadle) J. Wright Biltmore Ash

I *Ligustum sinense* Lour. Chinese Privet

I *L. vulgare* L. Common Privet

ONAGRACEAE

N <i>Gaura biennis</i> L.	Evening Primrose
N <i>Oenothera biennis</i> L.	Evening Primrose
N <i>O. speciosa</i> Nutt.	Showy Evening Primrose

OXALIDACEAE

N <i>Oxalis rubra</i> St. Hil.	Wood Sorrel Lady's Sorrel
N <i>O. stricta</i> L.	Southern Yellow Wood Sorrel

PASSIFLORACEAE

N <i>Passiflora incarnata</i> L.	Passion-flower Maypops
----------------------------------	---------------------------

PHYTOLACCACEAE

N <i>Phytolacca americana</i> L.	Pokeweed, Pokeberry
----------------------------------	---------------------

PLANTACEAE

N <i>Platanus occidentalis</i> L.	Sycamore
-----------------------------------	----------

PLANTAGINACEAE

N <i>Plantago virginica</i> L.	<i>Plantain</i>
--------------------------------	-----------------

POLEMONIACEAE

N <i>Phlox carolina</i> L.	Pink Phlox
N <i>P. divaricata</i> L.	Blue Phlox
N <i>P. pilosa</i> L.	Downy Phlox

POLYGONACEAE

N <i>Polygonum punctatum</i> Ell.	
N <i>P. scandens</i> L.	False Buckwheat
N <i>P. setaceum</i> Baldw. ex. Ell.	

PORTULACAEAE

N <i>Talinum teretifolium</i> Pursh	Appalachian Fameflower
-------------------------------------	------------------------

PRIMULACEAE

N <i>Lysimachia tonsa</i> (Wood) R. Knuth	Appalachian Loosestrife
---	-------------------------

RANUNCULACEAE

N <i>Anemone virginiana</i> L.	Thimbleweed
I <i>Clematis dioscoreifolia</i> Levl. & Vaniot.	Clematis
N <i>C. virginiana</i> L.	Virgin's Bower
I <i>Consolida ambigua</i> (L.) Ball & Heywood	Delphinium
N <i>Hepatica acutiloba</i> DC.	Liverleaf

N	<i>Ranunculus abortivus</i> L.	Small-flowered Crowfoot Buttercup
I	<i>R. sardous</i> Crantz	Hispid Buttercup
N	<i>Thalictrum thalictroides</i> (L.) Eames & Boivin	Windflower

ROSACEAE

N	<i>Agrimonia pubescens</i> Wallr. var. <i>pubescens</i>	Cocklebur Harvest Lice
N	<i>A. rostellata</i> Wallr.	Woodland Agrimony
N	<i>Crataegus</i> sp.	Hawthorn
I	<i>Duchesnea indica</i> (Andr.) Focke	Indian strawberry Mock strawberry
N	<i>Potentilla simplex</i> Michx.	Common Cinquefoil
N	<i>Prunus serotina</i> Ehrh.	Black Cherry
I	<i>Pyrus communis</i> L.	Flowering Pear
N	<i>Rubus argutus</i> Link	Blackberry
N	<i>Sorbus arbutifolia</i> (L.) Heynhold var. <i>arbutifolia</i>	Red Chokeberry

RUBIACEAE

N	<i>Diodia virginiana</i> L.	Buttonweed
N	<i>Galium aparine</i> L.	Cleavers, Bedstraw
N	<i>Houstonia purpurea</i> L.	Large Bluet Summer Bluet
N	<i>H. pusilla</i> Schoepf.	Bluets

I *Veronica arvensis* L. Speedwell

SALICACEAE

I *Salix babylonica* L. Weeping willow

N *S. nigra* Marsh. Black Willow

SCROPHULARIACEAE

N *Linaria canadensis* (L.) Dum.–Cours. Blue Toadflax

N *Penstemon calycosus* Small Smooth Beardtongue

SOLANACEAE

N *Solanum carolinense* L. Horse Nettle

ULMACEAE

N *Celtis occidentalis* L. Hackberry

N *Planera aquatica* (Walt.) J.F. Gmel. Planer Tree
Water Elm

N *Ulmus alata* Michx. Winged Elm

VALERIANACEAE

N *Valerianella radiata* (L.) Dufur. Beaked Corn Salad

VERBENACEAE

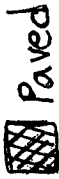
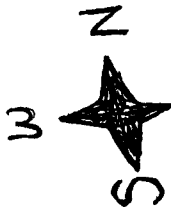
N <i>Callicarpa americana</i> L.	Beauty Berry French Mulberry
N <i>Lippia lanceolata</i> Michx.	Fogfruit
N <i>Verbena brasiliensis</i> Vell.	

VIOLACEAE

N <i>Viola blanda</i> Willd.	Sweet White Violet
N <i>V. conspersa</i> Reichenb.	American Dog-violet
N <i>V. hastata</i> Michx.	Halberd-leaved Violet
N <i>V. rafinesquii</i> Greene	Wild Pansy

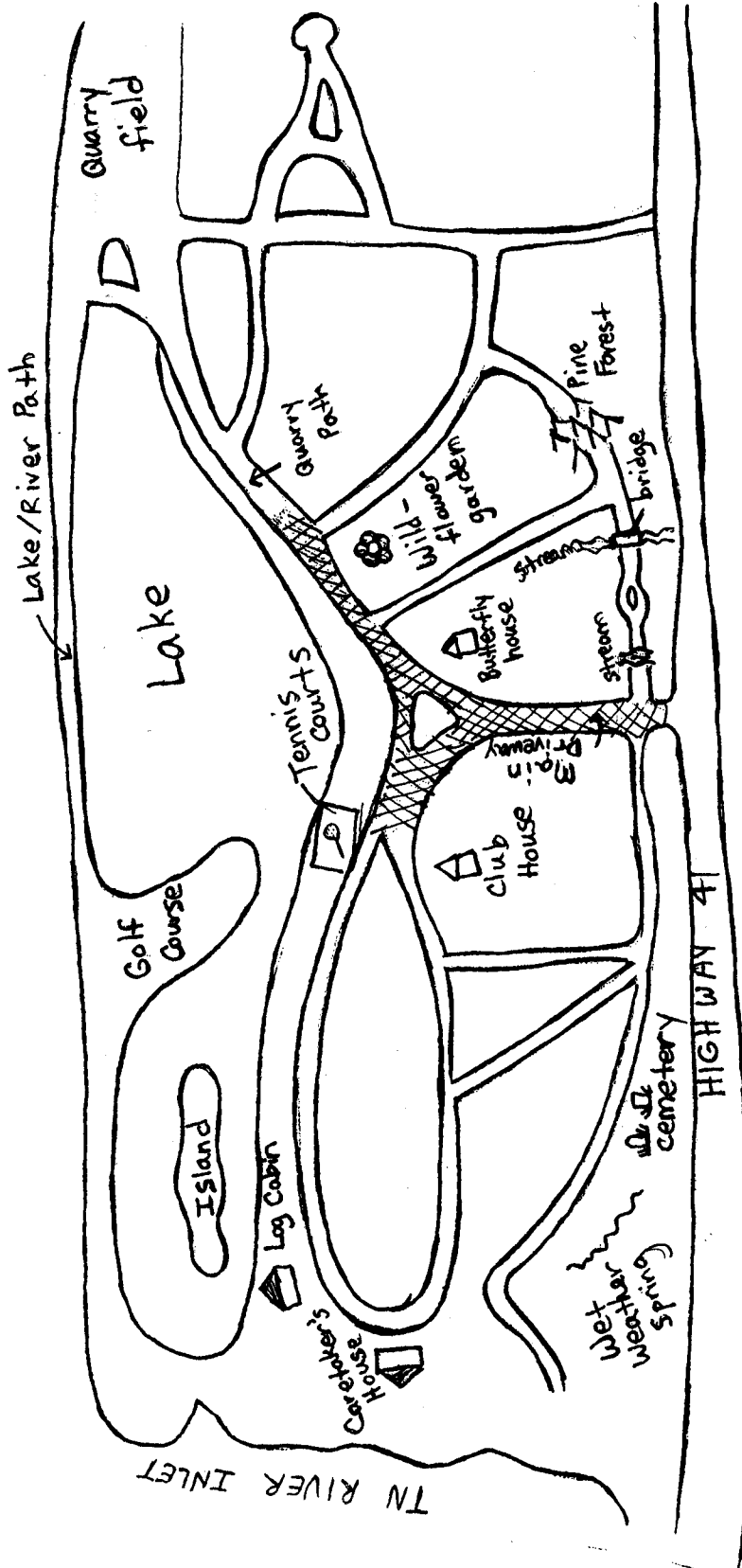
VITACEAE

N <i>Parthenocissus quinquefolia</i> (L.) Planch.	Virginia Creeper
N <i>Vitis rotundifolia</i> Michx.	Cat Grape Muscadine



Paved

Tennessee River



LITERATURE CITED

- Beck, J.T. 2000. *The Vascular Flora of Prentice Cooper State Forest and Wildlife Management Area, Tennessee*. 189 pp.
- Brown, J.H. and M.V. Lomolino. 1998. *Biogeography*. 2nd Ed. Sinauer Assoc, Sunderland. 691 pp.
- Carman, J.B. 2001. *Wildflowers of Tennessee*. Highland Rim Press, Tullahoma. 427 pp.
- Cronquist, A. 1980. *Vascular Flora of the Southeastern United States*. Vol. 1. Asteraceae. Univ. of North Carolina Press, Chapel Hill. 261 pp.
- Gleason, H.A. 1963. *The New Britton and Brown Illustrated Flora of the Northeastern United States and Adjacent Canada*. Vol. I, 482 pp.; Vol. II, 586 pp. Vol. III, 595 pp. Third printing, slightly revised. Published Co., New York.
- Hitchcock, A.S. and A. Chase. 1950. *Manual of Grasses of the United States*. U.S. Dept. of Agriculture Mis. Pub. No. 200. 1,051 pp.
- Isely, D. 1980. *Vascular Flora of the Southeastern United States*. Vol. 3. Part. 2. Leguminosae (Fabaceae). University of North Carolina, Chapel Hill. 258 pp.
- Kartesz, J.T. and R. Kartesz. 1980. *A Synonymized Checklist of the Vascular*

- Flora of the United States, Canada, and Greenland*. Vol. 2. University of North Carolina, Chapel Hill. 498 pp.
- Lyons, A.B. 1900. *Plant Names: Scientific and Popular*. Nelson, Baker, and Co., Detroit. 469 pp.
- Mahler, W.F. 1970. Manual of the Legumes of Tennessee. *Journ. Tenn. Acad. Sci.* 45(3): 65-96
- Metsger, D.A. and S.C. Byers. 1999. *Managing the Modern Herbarium*. Society for the Preservation of Natural History Collections. 357 pp.
- Petrides, G.A. 1972. *Trees and Shrubs*. Houghton Mifflin Company, New York. 428 pp.
- Petrides, G.A. and J. Wehr. 1998. *Eastern Trees*. Houghton Mifflin Company, New York. 434 pp.
- Radford, A.E., H.E. Ahles and C.R. Bell. 1971. *Manual of the Vascular Flora of the Carolinas*. Univ. of North Carolina Press, Chapel Hill. 1,183 pp.
- Spratt, H.G. and C.D. Huntley. 2002. *An Assessment of the Impact of the Invasive Species, Chinese privet, on Forest Soil Nutrient Transformations in the Tennessee River Gorge*. (In press).

