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Vascular Flora of the Possum Walk Trail at the Infinity Science Center, Hancock County, Mississippi

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by

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Abstract

The North American Coastal Plain contains some of the highest plant diversity in the temperate world. However, most of the region has remained unstudied, resulting in a lack of knowledge about the unique plant communities present there. This flora catalogues the vascular plant species along the Possum Walk Trail on the southeast corner of the Infinity Science Center in Hancock County, Mississippi. Additionally, interpretive signs have been developed to display information about engaging species and phenomena to increase public interest in native plant life and involve them conservation efforts. The site was surveyed from spring of 2015 to spring of 2016. 205 plant species were identified from 73 families, including 1 lycopod, 7 ferns, 4 gymnosperms, and 184 flowering plants, of which 49 are monocots and 144 are dicots. Of the species collected, 80% are native and 29% are endemic to the North American Coastal Plain.

Key Words: flora, endemic species, interpretive sign, North American Coastal Plain, Hancock County, Mississippi

Dedication

This thesis is dedicated to Diane and Jeffrey Miller, A. Pearce, and B. Boleware.

Acknowledgements

Thank you to Dr. Mac Alford for your unending guidance, knowledge, and sense of humor. Thanks to Joe Pettigrew and the staff at the Infinity Science Center for your assistance. Thanks to the Honors College and the University of Southern Mississippi for providing me with this opportunity.

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NACP – North American Coastal Plain

PWT – Possum Walk Trail

Chapter 1: Introduction

One of the most important steps in the process of developing conservation programs is gaining an understanding of what exactly you are trying to conserve. Without knowing which species reside in a certain area, it is difficult to create effective and lasting conservation strategies. Additionally, gaps in sampling can cause some areas that desperately need conservation to be ignored. One of the most glaring examples of this issue is the North American Coastal Plain (NACP). According to Noss et al. (2015), long held prejudices and lack of study within the NACP have resulted in this region failing to be categorized as a global biodiversity hotspot. The NACP has vascular plant endemism data that rivals hotspots listed in "Biodiversity hotspots for conservation priorities" (Myers et al., 2000). The NACP is home to 1625–1816 endemic plant species (depending on the boundary defined), outranking locales such as Central Chile (1605 spp.), the coastal forests of Tanzania and Kenya (1500 spp.), and the Caucasus (1600 spp.) (Myers et al., 2000; Noss et al., 2015). Although the designation of "hotspot" may seem like an arbitrary title, it draws attention to the fact that the listed areas have something very important and unique that is worth conserving. Producing novel research, however, will not be enough to increase conservation efforts in this region. The general public must be engaged and passionate about conserving the land in their own backyards to affect any real change.

The main goal of this project is to conduct a flora of the Possum Walk Trail on the campus of the Infinity Science Center in Pearlington, Hancock County, Mississippi. The selection of this area of study is significant for several reasons. As Hancock County

lacks a specific floristic survey, this research provides a small sampling of the species present and is a foundation for a future larger-scale study of the entire county. The area has been subjected to a long series of natural and anthropogenic disturbances which have a tangible effect on the diversity of plant species present in the area. This trail lies around the center of the NACP and represents a juncture of Gulf Coast Flatwood and Floodplain/Low Terrace ecoregions which are known to house some of Mississippi's most notable native plants, such as pitcher plants (Chapman et al., 2004). Lastly, the trail is frequented by members of the public who visit the Infinity Science Center which makes it a great location for interpretive signs that give information about the species that reside along the trail. The creation of these signs fulfills a secondary goal of this project: to increase public awareness of the surprising plant diversity in our region.

Chapter 2: Literature Review

2.1 Standards for Floras

Although the scope of this survey is small, the data provide a valuable contribution to the knowledge of vascular plants occurring in Mississippi. The literature does not provide a consensus of what a flora must contain; however, professionals in the field have proposed information to include to make it useful beyond the direct necessity of its completion. Palmer, Wade, and Neal (1995) detail that floras should, at minimum, comprise information about the location and its environment, the taxonomic scope of the study, designation of voucher specimens and their location in herbaria, details of the effort and extent of the study, a summary table with numbers for different taxonomic levels, criteria for the designation of exotic and native species, and a well-organized, unambiguous list of the species. They suggest that floras also include a map of the site studied, an assessment of the completion of the study and its relationship to other works, details of the disturbance history of the site, and more specific data about the site and the species collected therein. Floras vary in their purpose depending on the scope of the study and the intentions of their creators. Perhaps the oldest known flora, *Hortus Malabaricus* ("Garden of Malabar"), was a large document that detailed 742 species from Malabar, India (Manilal, 2012). The main purpose of this flora was to describe the medicinal uses of 650 of the listed plants as well as information about what diseases they are effective against and instructions for their use. Many floras serve the simple yet important purpose of listing the species found in particular areas and compiling information that can be used by other botanists, conservationists, public works personnel, and planning professionals.

The goal of this flora is to produce as much useful data as possible so that it can be an effective addition to the studies already conducted in Mississippi and the North American Coastal Plain as a whole.

2.2 Basic Site Information and Characteristics

The Possum Walk Trail (Possum Walk) is located north of Pearlington, Mississippi, near the Pearl River. It is approximately three miles long, running mainly north to south from the Infinity Science Center to Logtown Road ("Logtown Scenic Byway to Space").

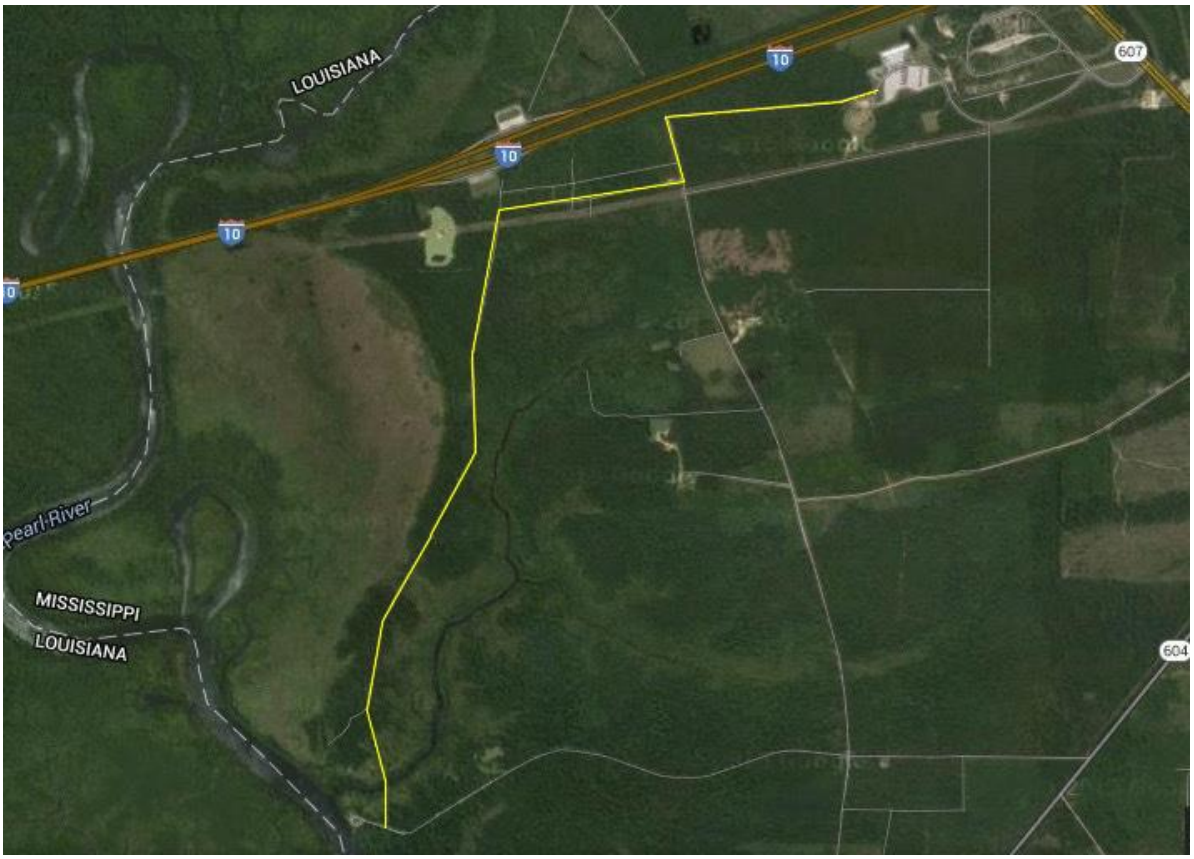

Figure 1: Map of the Possum Walk Trail. The trail crosses the Bogua Homa near the south entrance and makes a sharp eastward turn approximately a mile before reaching the Infinity campus to the northeast. Dark green areas represent forest, pine flatwood, or pine savannah, and the light green areas represent marsh.

Information about the geological, anthropogenic, and botanical history of the area is crucial to provide a framework to understand the presence of certain species and communities. The climate along the trail is coastal to subtropical, characterized by hot, humid summers and mild, wet winters. The substrate is primarily sandy and silty, with minimal elevation changes across the region (Chapman et al., 2004). The sedimentary deposits are thought to have weathered down from the Appalachian Mountains and settled across the region. The soil is categorized as primarily ultisols, alfisols, and histosols. The ultisols commonly have high acidity and leaching levels, but still have relatively high productivity due to their occurrence in subtropical forest areas. The majority of this type of soil in the U.S. is found in the coastal plain region. Alfisols are less leached soils that are high in clay and that occur very commonly around the U.S. The wetland zones of the area are laden with histosols, soils high in organic material. This phenomenon is caused by minimal drainage in the low-elevation areas that are high in decomposition rates and result in the accumulation of organic matter (McDaniel, 2013). Although these soils would typically result in an area with fairly low species richness, especially for endemics, notably high levels of native and alien diversity are present.

The Possum Walk trail begins near the eastern bank of the Pearl River and is characterized as the Southern Coastal Plain level III ecoregion; this can be further specified to level IV ecoregions of Gulf Coast flatwoods and floodplains/low terraces of river systems (Chapman et al., 2004). These areas are affected greatly by the soils, waters, and fire that are present. The most common ecosystem in this region is the longleaf pine forest. This general category encompasses diverse systems such as flatwoods, sandhills, savannahs, and seepage bogs (Mississippi Museum of Natural

Science, 2005). In the flatwoods areas, common species include slash pine (*Pinus elliottii*), longleaf pine (*Pinus palustris*), wiregrass, palmettos (*Sabal* spp.), and cypresses. In the wetter floodplain and low terrace areas, common species include bald and pond cypresses (*Taxodium ascendens* and *T. distichum*), tupelos (*Nyssa* spp.), oaks (Fagaceae), sweetgum (*Liquidambar styraciflua*), American elm (*Ulmus americana*), hickories (*Carya* spp.), and red maples (*Acer rubrum*), along with several common herbaceous species (Chapman et al., 2004). However, much of this land has been converted to pine plantations, resulting in a loss of diversity (Mississippi Museum of Natural Science, 2005). Modern efforts to return the land to its pre-exploration state are fairly successful, albeit relatively novel and confined.

2.3 Site History

Human activity has influenced the species and plant communities of the site as well. The earliest evidence of human occupation comes from 6000–4000 B.C. in the form of Native American shell mounds on the banks of rivers and the gulf coast (Scharff, 1999). The area was home to various cultures of Native American peoples for thousands of years who used the land but not to the point of exploitation. During the early colonial period, Hancock County was explored by French, Spanish, and English colonists who settled in the area. Upon Mississippi's admission into the Union, the region began to develop rapidly. In the early 1800s, logging became the most profitable industry in the area. A narrow railroad ran along and across the present day trail, which was used to transport the lumber produced nearby. During this time, the town of Logtown developed on the bank of the Pearl River. This era lasted until 1930 when the available quality wood

had been depleted causing the population at Logtown to decline rapidly. More recently, the area has become home to the extensive Stennis Space Center campus, which was built in the 1960s and has grown ever since. The development of this campus included the creation of an exclusion zone, an area where no habitable structures can exist. This development ended Logtown, as all the residents were forced to leave their homes. All that is left of Logtown is the cemetery near the southern entrance of Possum Walk (Scharff, 1999). Knowledge of the natural and human characteristics of the site provides a frame of reference and comparison when combined with the data about which species occur in this area.

Chapter 3: Methods

3.1 Collection and Preservation

The main component of this project is the collection of specimens to document the flora. Trips to the site were conducted from spring of 2015 to spring of 2016. If the specimen was small enough, the entire plant was collected. If this was not possible, as is the case with trees and other larger plants, a section of the plant was collected that has important identifying features such as leaves, flowers, or fruits. Each plant was placed into a folded sheet of newspaper and then placed into a plant press to maintain shape, color, and other features that are crucial for identification. The press consists of two wooden grates with sheets of cardboard and blotting paper stuck between, all held together by fabric straps that secure like a belt around the entire press. The plants were then dried on a plant drier consisting of 100 Watt incandescent lights in an enclosed wooden box.

3.2 Identification

Identification to species rank was accomplished primarily by the use of keys, mainly Weakley's (2015) key to the flora of the Southern and Mid-Atlantic states. Any divergence from his treatment is noted in the species list. Due to the characteristics and location of the site, Godfrey and Wooten's books *Aquatic and Wetland Plants of Southeastern United States: Monocotyledons* and *Dicotyledons* (1979 and 1981, respectively) were also frequently used. The morphological features of each specimen were studied and a dissecting microscope was used to view any plant features,

particularly sexual parts and hairs, that were hard to visualize at the macroscopic level. Finally, a label was created for each specimen that included its official nomenclature, a description of the plant, information about where it was collected, the collector's name, and the date of collection.

3.3 Indication of Native Status and Endemism

After identification, the range and native status of each species was checked using the United States Department of Agriculture Plants Database (2016). Native species were further described as endemic to the NACP (if applicable). This classification is based on the standard presented in Sorrie and Weakley's 2001 paper on the distribution of endemic species within the region. They established that 90% of the range of a given species must be within the NACP to be considered an endemic. These annotations provide critical data about the general occurrences of each species.

3.4 Interpretive Signs

The secondary component of this project is the creation of interpretive signs intended to be placed along the Possum Walk Trail. The signs vary in topics from information about a single species to an interesting relationship or phenomenon. Information was gathered for the signs from various sources and is cited in the sign transcripts.

Chapter 4: Checklist of the Vascular Flora

Below is the checklist of vascular plant species collected along the Possum Walk Trail and surrounding area of the Infinity Science Center, Pearlington, Mississippi. The list is divided into five major groups: Lycopodiophyta (lycopods), Polypodiophyta (ferns), Pinophyta (conifers), Magnoliophyta: Liliopsida (flowering plants: monocots), and Magnoliophyta: Magnoliopsida (flowering plants: dicots). The families and species within are arranged in alphabetical order. Following the specific epithet is the taxonomic authority and collector number. Species delimitation follows Weakley (2015) unless otherwise indicated. Non-native species are denoted with an asterisk (*). Species endemic to the NACP based on Sorrie and Weakley (2001) are marked with a cross (†).

LYCOPODIOPHYTA (“lycopods”)

LYCOPODIACEAE

†*Lycopodiella alopecuroides* (L.) Cranfill, Miller 197

POLYPODIOPHYTA (“ferns”)

ASPLENIACEAE

Asplenium platyneuron (L.) Britton, Sterns & Poggenb., Miller 271

BLECHNACEAE

Anchistea virginica (L.) Sm., Miller 206 and 269

Woodwardia areolata (L.) T. Moore, Miller 267

LYGODIACEAE

**Lygodium japonicum* (Thunb.) Sw., Miller 140

OSMUNDACEAE

Osmunda spectabilis (Willd.) A. Gray, Miller 116

Osmundastrum cinnamomeum (L.) C. Presl, Miller 268

THELYPTERIDACEAE

Thelypteris kunthii (Desv.) Morton, Miller 270

PINOPHYTA ("conifers")

PINACEAE

†*Pinus elliottii* Engelm., observed not collected

†*Pinus palustris* Mill., Miller 218

Pinus taeda L., Miller 162

TAXODIACEAE

†*Taxodium distichum* (L.) Rich., Miller 19

MAGNOLIOPHYTA: LILIOPSIDA ("monocots")

ALISTMATACEAE

Sagittaria graminea Michx., Miller 275

Sagittaria lancifolia L., Miller 72 and 211 and 276

ARACEAE

Peltandra virginica (L.) Schott, Miller 128

†*Sabal minor* (Jacq.) Pers., Miller 235

BROMELIACEAE

Tillandsia usneoides (L.) L., Miller 179

CYPERACEAE

†*Carex glaucescens* Elliot, Miller 136

Carex hyalinolepsis Steud., Miller 220

Carex #1, Miller 221

Carex #2, Miller 222

Cyperus #1, Miller 194

†*Eleocharis tuberculosa* (Michx.) Roem. & Schult., Miller 272

Eleocharis #1, Miller 226

**Fimbristylis schoenoides* (Retz.) Vahl, Miller 111

Rhynchospora corniculata (Lam.) A. Gray, Miller 73

†*Rhynchospora glomerata* (L.) Vahl, Miller 78

†*Rhynchospora latifolia* (Baldw. ex Elliot) W.W. Thomas, Miller 64

Scirpus cyperinus (L). Kunth, Miller 109

IRIDACEAE

Iris virginica L., Miller 285

Sisyrinchium #1, Miller 246

JUNCACEAE

Juncus validus Coville var. *validus*, Miller 81

LILIACEAE

†*Hypoxis sessilis* L., Miller 173 and 278

POACEAE

Agrostis #1, Miller 83

Andropogon glomeratus (Walter) Britton, Sterns & Poeggenb., Miller 214

Andropogon #1, Miller 148

†*Anthaenantia rufa* (Nutt.) Schult., Miller 118

†*Chasmanthium sessiliflorum* (Poir.) Yates, Miller 166

Dichanthelium #1, Miller 120

Dichanthelium #2, Miller 143

Dichanthelium #3, Miller 223

Dichanthelium #4, Miller 224

Dichanthelium #5, Miller 225

Digitaria #1, Miller 68

Echinochloa #1, Miller 69

**Eremochloa ophiuroides* (Munro) Hack., Miller 130

†*Erianthus coarctatus* (Fernald) R.Webster, Miller 154

**Microstegium vimineum* (Trin.) A. Camus, Miller 121

Oplismenus setarius (Lam.) Roem. and Schutl., Miller 160

**Paspalum dilatatum* Poir., Miller 85

Paspalum acuminatum Raddi, Miller 139

†*Phanopyrum gymnocarpon* (Elliott) Nash, Miller 203

Schizachyrium #1, Miller 207

**Sporobolus indicus* (L.) R. Br., Miller 198

Tridens flavus (L.) Hitchc., Miller 90

Tripsacum dactyloides L., Miller 144

SMILACACEAE

Smilax bona-nox L., Miller 146 and 187 and 216

Smilax glauca Walter

Smilax lauriflolia L.

Smilax rotundifolia L., Miller 115 and 208 and 243

XYRIDACEAE

Xyris #1, Miller 80

MAGNOLIOPHYTA: MAGNOLIOPSIDA ("dicots")

ACERACEAE

†*Acer rubrum* L., observed not collected

AMARANTHACEAE

**Alternanthera philoxeroides* (Mart.) Griseb., Miller 175

ANACARDIACEAE

Rhus copallinum L., Miller 193

Toxicodendron radicans (L.) Kuntze, Miller 258

APIACEAE

**Centella asiatica* (L.) Urb., Miller 155 and 238

Hydrocotyle umbellata (L.), Miller 291

AQUIFOLIACEAE

†*Ilex coriacea* (Pursh) Chapm., Miller 170 and 251

†*Ilex decidua* var. *decidua* Walter, Miller 110 and 142 and 161

†*Ilex opaca* Aiton, Miller 156 and 217

†*Ilex vomitoria* Aiton, Miller 127

ARISTOLOCHIACEAE

Isotrema tomentosum Sims, Miller 215

ASTERACEAE

†*Acmella oppositifolia* (Lam.) R.K. Jansen, Miller 87

**Ambrosia artemisiifolia* L., Miller 89

Baccharis halimifolia L., Miller 182

Bidens aristosa (Michx.) Britton, Miller 174

†*Cirsium horridulum*, Michx., Miller 232

†*Chaptalia tomentosa* Vent., Miller 239

Conoclinium coelestinum (L.) DC., Miller 171 and 205

Conyza canadensis (L.) Cronquist, Miller 92

†*Coreyopsis linifolia* Nutt., Miller 191

†*Elephantopus elatus* Bertol., Miller 59

†*Elephantopus nudatus* A. Gray, Miller 61 and 184

Elephantopus tomentosus L., Miller 185

†*Erechtites hieraciifolia* (L.) Raf. ex DC., Miller 97

†*Erigeron vernus* (L.) Torr. & A. Gray, Miller 280

Eupatorium capillifollium (Lam.) Small, Miller 183 and 196

Eupatorium serotinum Michx., Miller 101

Eupatorium torreyanum Short & Peter, Miller 159

†*Euthamia caroliniana* (L.) Greene ex Porter & Britton, Miller 137

**Eutrochium maculatum* (L.) E.E. Lamont, Miller 123

Gamochaeta antillana (Urb.) Anderb., Miller 265

†*Gamochaeta chionesthes* G.L. Nesom, Miller 286

Gamochaeta purpurea (L.) Cabrera, Miller 287

Helianthus angustifolius L., Miller 151

Iva annua L., Miller 96

†*Liatris elegans* (Walter) Michx., Miller 212

Packera glabella (Poir.) C. Jeffrey, Miller 245

Pyrrhopappus carolinianus (Walter) DC., Miller 298

Solidago altissima L., Miller 138

†*Solidago rugosa* Mill., Miller 77 and 108

†*Solidago salicina* Ell., Miller 192

†*Stokesia laevis* (Hill) Greene, Miller 153

Symphyotrichum lateriflorum (L.) Á. Löve & D. Löve, Miller 209

Symphyotrichum #1, Miller 122

CAMPANULACEAE

Lobelia appendiculata A. DC., Miller 188

†*Lobelia brevifolia* Nutt. ex A. DC., Miller 150

†*Lobelia flaccidifolia* Small, Miller 169 and 178

CAPRIFOLIACEAE

**Lonicera japonica* Thunb., Miller 114

Viburnum dentatum L., Miller 254

CLETHRACEAE

†*Clethra alnifolia* L., Miller 255

CLUSIACEAE

†*Hypericum brachyphyllum* (Stach.) Steud., Miller 199

†*Hypericum cistifolium* Lam., Miller 190

†*Hypericum galioides* Lam., Miller 234

Hypericum hypericoides (L.) Crantz, Miller 157 and 219

CONVOLVULACEAE

†*Dichondra carolinensis* Michx., Miller 242

Ipomoea cordatotriloba Dennst., Miller 62

**Ipomoea purpurea* (L.) Roth, Miller 60

CORNACEAE

Nyssa biflora Walter, Miller 297

Nyssa sylvatica Marshall, Miller 256

CYRILLACEAE

†*Cyrilla racemiflora* L., Miller 257

DROSERACEAE

Drosera brevifolia Pursh, Miller 292

EBENACEAE

Diospyros virginiana L., Miller 262

ERICACEAE

Vaccinium elliottii Chapm., Miller 284

Vaccinium stamineum L., Miller 246

EUPHORBIACEAE

Croton capitatus Michx.

Euphorbia pubentissima Michx., Miller 181

**Phyllanthus urinaria* L., Miller 103 and 113

**Triadica sebifera* L., Miller 134

**Vernicia fordii* (Hemsl.) Airy-Shaw, Miller 71 and 209 and 253

FABACEAE

Apios americana Medik., Miller 65

Chamaecrista fasciculata (Michx.) Greene, Miller 180

†*Chamaecrista nictitans* (L.) Moench, Miller 98

†*Desmodium lineatum* DC., Miller 176

**Kummerowia striata* (Thunb.) Schindl., Miller 58

**Medicago polymorpha* L., Miller 282

Phaseolus polystachios (L.) Britton, Sterns & Poggenb., Miller 106 and 126

Sesbania herbacea (Mill.) McVaugh, Miller 102

Strophostyles leiosperma (Torr. & A. Gray) Piper, Miller 93 and 105

†*Tephrosia florida* (F.G. Dietr.) C.E. Wood, Miller 63

†*Tephrosia onobrychoides* Nutt., Miller 124

**Trifolium repens* L., Miller 240

**Vicia tetrasperma* (L.) Schreb., Miller 296

Vigna luteola (Jacq.) Benth., Miller 56

FAGACEAE

†*Quercus laurifolia* Michx., Miller 259

Quercus michauxii Nutt., Miller 202

Quercus nigra L., Miller 135

†*Quercus virginiana* (Mill.), Miller 165

GELSEMIACEAE

Gelsemium rankinii Small, Miller 263

GERANIACEAE

Geranium carolinianum L., Miller 244

HALORAGACEAE

Proserpinaca pectinata L., Miller 273

HAMAMELIDACEAE

Liquidambar styraciflua L., Miller 141 and 201

LAMIACEAE

Salvia lyrata L., Miller 266

Scutellaria integrifolia L., Miller 281

†*Stachys floridana* Shuttlw. ex Benth., Miller 249

Trichostema dichotomum L., Miller 132

LINDERNIACEAE

Micranthemum umbrosum (J.F. Gmel.) S.F. Blake, Miller 236

LOGANIACEAE

Mitreola petiolata (J.F. Gmel.) Torr. & A. Gray, Miller 75

LAURACEAE

†*Persea palustris* (Raf.) Sarg., Miller 200 and 247

LYTHRACEAE

**Cuphea carthagenensis* (Jacq.) J.F. Macbr., Miller 104

Lythrum alatum Pursh, Miller 99

MAGNOLIACEAE

Magnolia grandiflora L., Miller 210

†*Magnolia virginiana* L., observed but not collected

MALVACEAE

†*Hibiscus aculeatus* Walter, Miller 67

Sida rhombifolia (L.), Miller 94

MELASTOMATACEAE

†*Rhexia virginica* (L.), Miller 95 and 107 and 152

MYRICACEAE

Morella cerifera (L.) Small, Miller 252

OLEACEAE

†*Fraxinus caroliniana* Mill., Miller 289

ONAGRACEAE

Ludwigia decurrens Walter, Miller 66 and 74 and 91

†*Ludwigia linearis* Walter, Miller 88

**Ludwigia peploides* (Kunth) P.H. Raven, Miller 231

OROBANCHACEAE

Agalinis fasciculata (Elliott) Raf., Miller 172

OXALIDACEAE

**Oxalis debilis* (Kunth), Miller 195

Oxalis dillenii Jacq., Miller 214 and 274

PLANTAGINACEAE

†*Bacopa caroliniana* (Walter) B.L. Rob., Miller 125 and 237

Gratiola virginiana L., Miller 294

Mecardonia acuminata (Walter) Small, Miller 79 and 117

Plantago virginica L., Miller 283

POLYGALACEAE

†*Polygala nana* (Michx.) DC., Miller 131 and 295

POLYGONACEAE

†*Brunnichia ovata* (Walter) Shinners, Miller 70

Polygonum hydropiperoides Michx., Miller 86

Rumex verticillatus L., Miller 290

PONTEDERIACEAE

Pontederia cordata L., Miller 233

PRIMULACEAE

Lysimachia minima (L.) Krause, Miller 277

RANUNCULACEAE

Clematis occidentalis (Hornem.) DC. var. *occidentalis*

**Clematis terniflora* DC., Miller 164

Clematis #1, Miller 189

ROSACEAE

Rosa laevigata Michx., Miller 17

Rubus flagellaris Willd., Miller 16

Rubus pensilvanicus Poir., Miller 288

RUBIACEAE

Diodia teres Walter, Miller 84

†*Diodia virginiana* L., Miller 82

Galium tinctorium (L,) Scop., Miller 227

RUTACEAE

**Poncirus trifoliata* (L.) Raf., Miller 119

SALICACEAE

Salix nigra Marshall, Miller 260

SARRACENIACEAE

Sarracenia alata Alph. Wood, Miller 145

SAURURACEAE

Saururus cernuus L., Miller 293

SOLANACEAE

Solanum carolinense L. var. *carolinense*, Miller 168

ULMACEAE

Ulmus americana L., Miller 204

VALERIANACEAE

Valerianella radiata (L.) Dufr., Miller 264

VERBENACEAE

Callicarpa americana L., Miller 55

Phyla nodiflora (L.) Greene, Miller 158

**Verbena brasiliensis* Vell., Miller 76

VIOLACEAE

Viola × *primulifolia* L., Miller 241

VITACEAE

†*Vitis rotundifolia* Michx., Miller 149

Chapter 5: Discussion

Table 1. Synopsis of the Major Kinds of Vascular Plants in the Flora

Major Group	Total Species	Introduced Species	Native Species	Endemic Species
Lycopodiophyta	1	0	1	1
Polypodiophyta	7	1	6	0
Pinophyta	4	0	4	3
Liliopsida	49	5	28	10
Magnoliopsida	144	19	123	45
All Taxa	205	25	162	59

Of the 205 species collected, about 80% are native. This is a similar percentage to other floras of the region (Myers and Wunderlin, 2003). 29% of the species are endemic. 70% of species were dicots, 24% monocots, 2% gymnosperms, 3% ferns, and less than 1% lycopods. However, some of the specimens were not identified to species level and were not included in the analysis of native and endemic status. There were 73 different families represented. The largest family represented was Asteraceae (sunflowers and relatives) with 33 species. The second largest family was Poaceae (grasses) with 23 species.

Due to the construction of the trail, the areas that exist along it are fairly disturbed. Although the trail is fairly short, several unique ecosystems are present. The Possum Walk Trail passes through several major plant communities: mesic hammock, floodplain or bottomland forest, riverine, old pine plantation, tupelo swamp, pitcher plant bog, and ruderal. Although none of the coastal counties of Mississippi or Alabama have documented floras, there are a few studied areas in Florida that have similar communities

to those found along the PWT. In the mesic hammock region, the PWT shares *Quercus virginiana, Magnolia grandiflora, Liquidambar styraciflua, Callicarpa americana, Ilex opaca, I. glabra, I. vomitoria, Diospyros virginiana, Myrica cerifera, Chasmanthium sessiliflorum, Panicum* spp., and *Dichanthelium* spp. with the Guide to the Natural Communities of Florida (2010). It shares *Liquidambar styraciflua, Quercus virginiana, Q. nigra, Ulmus americana, Acer rubrum, Nyssa sylvatica, Taxodium distichum, Carpinus caroliniana, Ilex decidua, Sabal minor, Persea palustris, Morella cerifera, Dichanthelium* spp., and *Carex* spp. with the bottomland forest described in the guide. It also shares *Sagittaria lancifolia, Morella cerifera, Cyrilla racemiflora, Hypericum* spp., *Anchistea virginica, Osmundastrum cinnamomeum, Rhynchospora* spp., *Saururus cernuus, Polygonum* spp., *Sphagnum* spp., *Toxicodendron radicans, Smilax laurifolia, Tillandsia usneoides, Acer rubrum, Persea palustris, Pinus elliottii*, and *Magnolia virginiana* with the description of the basin swamp in the guide.

The future of the land in this area is dependent upon the management of the Infinity Science Center. The Center recently made some changes to and around the trail that will have lasting effects. The widening of the trail to accommodate the Center's new trolley system has caused disturbance to herbaceous species growing right next to the current trail boundaries. Additionally, the old pine plantation section just south of where the trail makes its last 90° turn was treated with a prescribed burn on April 6, 2016. This was done in an attempt to re-introduce fire to the pine ecosystem, a phenomenon critical to the restoration of this section to the original pine savanna that covered the Southeastern United States. This change will not only help the longleaf pine trees move on to the next

stage in their life cycle but also encourage now rare native and endemic species to grow in the newly cleared understory.

Chapter 6: Sign Transcripts

What is a savanna?

The longleaf pine savanna was once the dominant ecosystem in the southeast United States, covering about 90 million acres. Less than 3% of that range remains today. It consists of sparsely spaced longleaf pines (*Pinus palustris*) in open areas filled with wiregrass and other herbs. In wetter areas, the ground is covered by carnivorous pitcher plants (Sarraceniaceae). This ecosystem relies on fires to encourage the growth of grasses and herbaceous plants, hold back competition to the longleaf pine, and prevent the encroachment of shrubs. The savanna is a critical community for rare native plant species and the endangered gopher tortoise (*Gopherus polyphemus*). To learn more about the restoration of longleaf pine ecosystems, visit www.longleafalliance.org

Uses of Yaupon Holly

Yaupon holly, or *Ilex vomitoria*, is a shrub with grey bark, small crenate (or scalloped) evergreen leaves, and red berries on the female plants in the fall. This plant gets its scientific name from its main use by Native Americans: they would cook the leaves and shoots into a tea used during ceremonial cleansing of the body, which involved vomiting. (Consuming its leaves alone, however, does not induce vomiting.) It is the only North American plant species that contains caffeine, and the leaves can be made into teas with caffeine levels equal to traditional black and green teas. The berries are widely eaten by birds, dear, and smaller mammals, but are poisonous to humans. (from Shadow, 2011).

Goldenrod vs. Ragweed

When you sneeze and sniffle in the late summer, you may look to the many yellow flowers of the goldenrod to lay your blame. However, "hay-fever" is actually caused by ragweed (*Ambrosia* spp.), not goldenrod (*Solidago* spp.). Ragweed plants have very small green flowers that grow in a vertical spike at the end of stems or branches. Because they are only wind pollinated, they throw as much pollen as they can into the wind and up your nose. Goldenrods are both wind and insect pollinated, reducing the amount of pollen they must produce, but because they often grow with ragweed, they are mistakenly blamed. (from Jarvis, 2016).

Carnivorous Plants

Mississippi is home to four major groups of carnivorous plants which live in wet pine savannas. Carnivorous plants do photosynthesize but use the insects they capture for nutrients like nitrogen and phosphorus. In other words, they get their energy from the sun but get their "vitamins" from eating animals. Pitcher plants, locally known as buttercups, have a large modified leaf shaped into a pitcher with nectar and downward-pointing hairs inside. They attract insects with the nectar and once their prey goes too far in, it cannot come back out. The pale pitcher plant (*Sarracenia alata*) can be found along the northern section of the trail and around the Infinity Boardwalk. Butterworts have a sweet, sticky leaf that attracts insects and rolls up around prey until it is digested. Sundews also use their sticky leaves to capture prey and usually have very small leaves covered in red hairs. The dwarf sundew (*Drosera brevifolia*) can be found along the northern end of the

trail. Aquatic bladderworts use a trapdoor system to catch their prey. When a tiny animal brushes against the bladder, the door opens and sucks the water and animal inside. (from U.S. Fish and Wildlife Service, 2009).

Tung Oil in Mississippi

After the land in the Gulf Coast had been essentially cleared of all usable pine timber, farmers were struggling to find another crop to make ends meet. In 1905, the Department of Agriculture began to give tung oil trees from China to growers in the United States. By that time, tung oil had been a common import used in waterproofing, paint, varnish, linoleum, and ink. The Gulf Coast had the perfect climate for the tree's specific growing conditions and became a hub for tung oil processing and production, boosting the area's economy. The industry grew until Hurricane Camille swept across the southeast and destroyed up to 40,000 acres of tung trees. The land planted in tung was quickly converted into pasture, but today some of the land has been planted in the original pine. (from Rob and Travis, 2013).

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