

The Ecology of Genius Reserve  
Fall 2005  
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With the native nursery in place from the summer semester, a project was chosen on the north side of the Genius Drive entrance for the fall term. The purpose of this project is to evaluate the ecological alternatives for restoration in designated areas of the Genius Preserve and the continuation of building a plant bank that consists of both native and historic materials. Care of plant nursery continues.

The area designated 4341 – Longleaf Pine/Red Cedar/Southern Magnolia Restoration plantings and 630 –Wetland Forest Mixed on the vegetative land use map by Breedlove, Dennis and Associates Inc., was an ideal spot to continue restoration. This area is here in after referred to as “Cedar Grove” and “Lakefront” planting areas respectively.

This project will integrate results from ongoing and previous research that focuses on the control of non-native invasive species and the re-establishment of native plant species. Additional results from restoration include improving nesting and foraging habitat for wading birds, songbirds, birds of prey, migratory bird species, gopher tortoise, gray fox and indigo snake.

The diagram on the cover piece clearly shows the old Dinky Railroad line in gray. The lakefront trees were interspersed with invasive Camphor and African Ear trees and are divided by 2431 – Ginger Patch and 2231- Banana Patch that are historically introduced exotics. 221 – The Citrus Groves flank the entrance to Genius Preserve.

The Cedar Grove to the south of the dinky line has been partially planted with native trees and butterfly plantings from previous classes. The north side required invasive clearing and a plan for continuity of vegetative land use perimeters. Trees were tagged for removal and approved by the Dr. Stephenson and the Genius Foundation.

Charlie Theurer of Arboricultural Services donated a 7-man crew consisting of tree climbers, ground men and equipment operators. He provided the ability to drop trees, chip debris and stump grinding. A full day was spent at the lakefront removing 5 large Camphor Trees, 1 African Ear Tree, limbs that were hanging in the hurricane damaged native canopy and stump grinding of Camphor trees that were showing signs of vigorous re-growth.



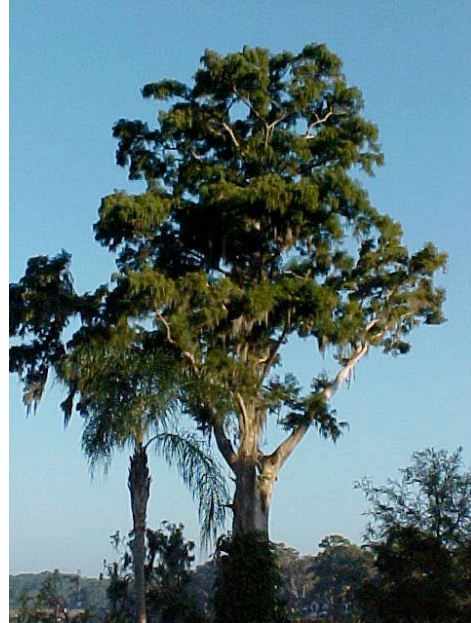


**Before**



**After**

From the Windsong fence to the beginning of 4392 – Mixed hardwood Canopy with dense native understory, 500 running feet of lakefront was cleared.



The result of the invasive tree removal was a beautiful view of Pignut Hickories, graceful old Bald Cypress, volunteer Palm trees and, young Oaks.

With the Canopy pests removed, we went to the sub-canopy and vegetative understory to provide a clean palette for planting. Category I invasive species on the property and listed by the Florida Exotic Pest Plant Council (FLEPPC 2005) include:

1. Wild Taro or *Colocasia esculenta* is commonly known as elephant ear. This will be a constant battle. Wild taro was introduced as food crop in the 1800's. It has large (2-3 ft.) shield-like leaves. This plant spreads primarily by corms or underground. (USDA)
2. Arrowhead Vine or *Syngonium podophyllum* is a terribly invasive vine brought to Florida as an exotic houseplant. (Ramey) This plant climbs trees, adheres strongly with fibrous roots and is difficult to remove.



Wild Taro



Arrowhead Vine

3. The Polynesians introduced the air potato, *Dioscorea bulbifera* wherever they settled in the Pacific. It came to the United States from Africa with the slave trade. In 1905, the USDA sent a sample to Henry Nehrling in Florida. Planting it, Nehrling quickly learned of its aggressive growth and recommended against its cultivation. But somehow it escaped. Growing at a rate of 8 inches per day it can consume an established forest. (Vandaveer)



Along with Camphor and African Ear seedlings, the three invasives listed above are the primary vegetation to be controlled at the lakefront planting area.

By definition on the FLEPPC web site, exotic plants on this list “alter native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives”. The FLEPPC invasive plant list for 2005 is attached as addendum “A”.

Management of newly planted areas is a big concern. In the heat of the early fall, spraying of non-selective herbicides produced good results, usually within 4-7 days. During hot weather, when an accelerant such as Scythe or even the simple addition of “Lemon Dawn” dishwashing soap, is used, tangible results can be seen in a 24-hour period of time by the browning and withering of the invasives that are sprayed.

Throughout the last part of the semester, the temperature dropped and spraying with Round Up or Prosecutor became less effective even with accelerants and “kill” times increased dramatically.

Mechanical removal by hand provided immediate relief but is time consuming and labor intensive. The area cleared is a fertile seed bank for re-vegetation of invasive and community altering pests. Consistent spraying according to all label directions and using correct safety procedures, pre-emergent control and top-dressing with pine straw to prevent sunlight aiding germination are recommended for future supervision of sites cleared and replanted.

Historical dead Cedars and Pine trees were left in place as “snags” or animal habitat. The uprooted Cedars with their striking wood grain burls and massive root systems still display the grandeur of the living.



Some of the dead trees are still standing. They provide a sense when watching a raptor at the top limb of one of these noble giants, “he is the king of all he purveys”. The Genius Preserve abounds with life.



The next phase of development included grading the land for new plantings. The decision was made to relocate some of the ginger clumps and reduce the size of the area they cover to allow more native vegetation. A vista can be seen looking down the dinky line towards the native canopy forest between the gingers to the base of a double Bald Cypress dubbed “the twins”.



This vista inspired the idea to use the Ginger clumps as “guiding paths” supplemented by new native grasses for the dinky line railroad and as transition material between ecotones. Native plants taken from cuttings and seedlings, raised in the nursery included Wild Coffee, Beauty Berry, Chickasaw Plum and Hickories and will be incorporated into this area. Dramstad’s principles were consulted for coherence.

The Hickory (*Carya glabra*) was difficult to propagate even from freshly dug seedlings. Michael Dirr’s Manual of Woody Landscape Plants states from his personal experience with purchased seedlings, the mortality rate was 60%. His seedlings like ours were put into 15-gallon containers to accommodate the taproot, which is the size of a carrot on a plant with three leaves. This further indicates the importance of preserving the existing Hickories on the property.

Wetland loving Florida natives were chosen to round out the lakefront plantings and include Red Maple, Bald Cypress, Loblolly Bay, Sweet Bay, Yellow Cannas, Native Iris, Swamp Dogwood and Swamp Hibiscus. Upland plantings include Love Grass, Gallberry and Butterfly weed.



The lakefront now has an undulating curve of Red Maple, Bald Cypress, Swamp Hibiscus, Canna Lilies and Native Iris. Total lakefront clearing was discouraged to prohibit boats from pulling up onto the shoreline.

Kricher's Eastern Forests came the closest in describing the existing diversity for our area near the lake when he discussed the "Southern Mixed Hardwood Swamp Forest". Though the property upland is mostly Mesic, Hydric adapted Oak, Willow and Hickory were indicators of the type of environment we were working on, further confirmed with the sighting of large colonies of egrets and herons. Pileated Woodpeckers and some smaller Downy Woodpeckers were observed on many occasions in the Live Oak/Bald Cypress transition area along with Water Moccasin and Turtles by the waters edge.

Dirr's Woody Landscape Plants, the USDA web site, and, Greene's Flowers of the South were used in conjunction with Haehle's Native Florida Plants to bring some complementing color, form and variety to the Genius Preserve. (Plant List Addendum B)

Since the approved plant base on the Preserve consists of native plants and historically introduced exotic plants, it was found to be acceptable to introduce additional native plants that have a beneficial place in the food web and attract pollinators. Pollinators will benefit from having a protected habitat and introduced natives were selected by suitable habitat conditions.



Native Woody Ornamental additions to the Genius Preserve include:



Amelanchier Arborea

### Serviceberry Foliage:

Alternate and simple, the downy serviceberry sports obovate to ovate 1 to 3" long leaves, often cordate and acute or acuminate. The leaf margins are serrate, and the entire blade is supported by a 3/8" to 1 1/2" petiole. When the young leaves are emerging, they are often covered with a dense pubescence, but become less so with maturity.



### Flowers:

Pure white and borne in 2-4" long pendulous racemes in mid to late April, these extremely showy flowers only last 4 to 7 days. The sepals are reflexed at maturity with petals extending over 1 cm in length, and the pedicels of the lowermost flowers in each raceme are less than 1" long. They have been observed in flower from April 19 to April 25 in the Chicago land area, but blooming periods can be severely shortened by excessively warm weather. (USDA)



### ***Chionanthus virginicus***

Fringe tree is a small tree or large shrub named for its fringelike white flower petals. It is also called *old-mans-beard*. The fringe tree grows to 35 feet (11 meters) high. Its fragrant flowers bloom in early spring. Animals eat the fruits, which hang in clusters like grapes.

Fringe trees grow wild in the United States from New Jersey and southern Pennsylvania south to Florida and west to southern Missouri and eastern Texas. They thrive on rich, well-drained soil along the banks of rivers and streams. Gardeners plant fringe trees as ornamentals as far north as southern New England. Fringe trees have hard, heavy, pale-brown wood. The bark contains substances that can be used as medicines. A similar kind of fringe tree grows wild in China.

**Scientific classification.** The fringe tree belongs to the olive family, Oleaceae. (USDA)



**Vaccinium arboretum** - Sparkleberry, or Farkleberry, is an uncommon large shrub or small tree of woodland edges. It's the largest of our blueberries, though Black Highbush Blueberry (*V. fuscatum*) can get almost as big. The small, thick, lustrous, smooth, mostly-evergreen leaves with tiny red buds make sparkleberry easy to ID.

Sparkleberry grows on sand dunes, hammocks, dry hillsides, meadows, and in rocky woods. It also grows on a variety of moist sites such as wet bottomlands and along creek banks. Sparkleberry is found in most of the eastern United States between Texas and Florida in the south, to Virginia, Indiana, and Kansas in the north.

White-tailed deer, hares, and rabbits feed on the leaves. The fruit is eaten by a wide variety of birds and mammals, including black bears, deer, and chipmunks. The flowers provide food for bees. (USDA)



*Celtis laevigata* or Sugarberry is also known as sugar hackberry, hackberry, and Mississippi hackberry. Sugarberry can be easily recognized by its bark which is covered with wart-like bumps. Can easily reach 80' with a spreading canopy.

This tree is native to and widely distributed throughout the southeast and south central U. S. It typically occurs in moist to wet soils along streams and floodplains. Mature gray bark develops a warty texture. Insignificant, mostly monoecious, greenish flowers appear in spring (April –May), with male flowers in clusters and female flowers solitary. Female flowers give way to an often-abundant fruit crop of round fleshy berry-like drupes maturing to deep purple. (USDA)



Eastern Redbud Tree

The Eastern Redbud tree, *Cercis Canadensis*, is one of our most beautiful native flowering trees, occurring naturally throughout forests from Pennsylvania to Michigan, and south as far as Texas, even into northern Florida.

It is an easy-to-grow, small deciduous tree that displays an abundance of pink to purple blossoms in spring, followed by handsome heart shaped leaves during the summer, and long seedpods in the fall, along with yellow fall foliage.

In landscaping, these trees are effective as a single specimen, in groupings, in a shrub border, and especially nice in woodland and naturalized areas such as wildflower meadows. Plant in light shade at a tree line or right out in the open. Blooming occurs before the leaves appear. (USDA)

## Conclusion:

A PowerPoint presentation is the pictorial companion for the description of our work during the fall semester at Genius Preserve. Many hours of planning, ordering, researching, petitions for services from professional trades and hands on labor were required to produce results of planting a young forest.

The Genius Preserve is a complex ecosystem. Krohne's General Ecology tells us that is a good problem to have. He states, "Complex systems are inherently more stable...species diversity leads to complex ecological interactions; the more species that are present, the more levels of predation, competition, parasitism, and so on, that can exist."

This large living bionetwork is well underway with human assistance to overcoming the small magnitude disturbance it has endured (i.e. hurricanes) as opposed to large magnitude disturbances which permanently change things. The greatest assistance we can provide is the continuation of invasive removal. If left unattended, Genius Preserve could easily experience a large magnitude disturbance simply by being invaded and overrun, shaded out and left to die.

When large patches of ground are exposed such as the lakefront site we chose to restore, any wind-dispersed seed can become the main vegetation. Aggressive exotic and invasive plants do not succumb in the same manner the pioneer species do in actual succession. Invasive removal allows the natural perennial, herbaceous, woody plant community to march towards canopy development and closure.

There is much evidence of "coppice shoots" (Kricher) or stump regeneration in Oaks, Magnolias, Hickories and Maples that were damaged in the hurricane that are surviving on their root systems and putting out new growth. Addition of grasses and sub-canopy materials shades out un-germinated seeds of the undesirables.

The spring should be a glorious show at the Genius Preserve. Whether wind or insect pollinated, the lakefront will be a buzz with color, life, shoots, blooms and activity. It has been a pleasure to be a part of this restoration.

**Don't judge each day by the harvest you reap, but by the seeds you plant.**

*- Robert Louis Stevenson, 1850 – 1894*

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Addendum "B"

Restoration Planting List

Loblolly Bay  
Sweet Bay  
Weeping Willow  
Red Maple  
Bald Cypress  
Butterfly Weed  
Turnea  
Native Iris  
Yellow Canna  
Gallberry  
Swamp Dogwood  
Love Grass  
Swamp Hickory  
Pignut Hickory  
Redbud  
Fringe Tree  
Sparkleberry  
Sugarberry  
Serviceberry  
Red Swamp Mallow  
Pink Swamp Mallow  
Liatris  
Coreopsis  
Cardboard Palm