definite sequence to make scanning for specifics easier such as plants suitable to a particular ecosystem.

Family consideration is a help in determining possible propagation techniques or soil type such as acid soils and fibrous roots in the Ericaceae family. Size given is a very general expected optimum size by height and spread. Many scrub species will be dwarfed under harsh growing conditions, just as dense shade will greatly increase the height and density of *Myrica cerifera.* Some shrubs are slow growers or are easily maintained at shorter heights with minimal pruning. Branching pattern and leaf character is also a consideration for texture by landscape designers.

Ecosystem and growth range will give the grower a feeling for the conditions under which the plant may grow. A plant found in the sand scrub and sandhills generally does well on a well-drained soil mix with little fertilizer and less irrigation, especially overhead irrigation. Richer growing conditions can make them more susceptible to disease and insect damage. Wetland plants generally grow easily under average potting soil and fertilizer with regular irrigation. Only those that usually have their roots submersed such as *Pontederia cordata,* L., pickerel weed, seem to require wetter conditions or they will appear stunted. None of the shrubs listed in Table 1 fall into that category.

With a thorough knowledge of Florida's ecosystems, it is possible to determine which plants will do well on a particular site whether there is existing native vegetation or not. Sunshade patterns, soil type in particular, and new drainage patterns caused by construction are considerations. *26 Ecological Communities of Florida* prepared by the U.S. Dept. Agr. Soil Conservation Service is helpful in relating communities, species, and soil types (9). The plants are much more versatile than was expected. Combinations of *Taxodium distichum,* bald cypress, and *Illicium floridanum,* Ellis Florida anise, from swamps and *Garberia heterophylla,* (Bart.) Merr. & Harp. garberia, from sand scrub on the same planting site have been successful after 2 years. However, for long term establishment and little to no maintenance including irrigation after the plants are established (one growing season), native habitat should be considered.

The growth range is also an indication of cold hardiness. Many times the range can be safely extended.

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RETAINING AND ENHANCING A NATURAL LANDSCAPE FOR A RESIDENCE

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Abstract. **The process by which a home is built and landscaped on a lot while retaining an existing sandhill ecosystem is discussed. The process was begun by creating a detailed site survey of the existing vegetation. Disturbance of the site during construction was limited to within 5-10 ft of the house, 1 side of the house for access, and the future drive access. The site was cleared of unwanted vegetation using hand tools. Additional plantings of mostly native materials were added to the natural areas, used in a more traditional manner in the disturbed areas around the home, and included in a formal parterre garden. Maintenance included management of weeds and plant suckers, checking irrigation controls, and encouragement of selected species.**

John Kunkel Small observed in the 1920's that the natural Florida landscape was being so desecrated that he could hardly bring himself to return anymore. As landscape architects and contractors we are trying to reverse the trend of the last 60 years by early involvement with a client's site and saving as much of the existing native system as possible.

Reasons for Preserving and Restoring

Cost benefit. Clearing costs are reduced and there is less material to haul away. Erosion costs are reduced. The undisturbed areas reduce erosion and do not require irrigation. There is a lessened cost for heating and cooling buildings. Mature natural landscape can shade south, east and west walls and roof to reduce heat build up and can reduce chill factor by buffering cool winter winds from walls. There is a lessened need for additional landscaping. Preserving landscape can negate need and cost of privacy structures. There are reduced maintenance costs.

Site conditions. Disturbed ground will be quickly covered by primary invasive weed growth not encountered on undisturbed sites. The cheapest way to reclaim disturbed

ground is sodding which is the most costly to maintain. Sod maintenance is 7 times as costly (man hours & materials) as introduced low maintenance ground covers such as juniper or ivy. Undisturbed areas require little maintenance.

Environmental. Preserving even small areas will help preserve the variety of species necessary for continued health of our environment and will preserve vital habitats for animals. Preservation allows natural water retention and prevents erosion. There is a lessened demand on water and energy resources. Rare and endangered plant species that are irreplaceable may be saved.

Aesthetic and site functional. Existing natural landscape provides screening from surrounding land use. The climate is enhanced. Mature canopy and understory gives scale to residence and gives depth to the lot. Understory gives foreground, background, and noise buffer to structure. There are many colorful and attractive native plants in every ecosystem that do not require maintenance and would take years to replace with exotics.

Residential Site Description

The Sammons residence at Grenelefe near Haines City afforded an excellent opportunity to show what can be done in the residential landscape. The site may be described as a transitional zone between an oak/hickory scrub and mesic hammock/bayhead on a finger of the old Lake Marion flood plain. Oaks and hickory dominate the canopy. Silver buckthorn (*Bumelia tenax* (L.) Willd.) commonly appearing as a shrub occurs here in speciment tree form. Blackhaw (*Viburnum obovatum* Walt.) a flowering shrub or small tree, is well represented in the lower corner of the site. Other vines and shrubs of importance include Carolina yellow jasmine (*Gelsemium sempervirens* (L.) J. ST. Hil.), coral honeysuckle (*Lonicera sempervirens* L.), St. Andrew's Cross (*Hypericum hypericoides* (L.) Crantz), bear grass (*Yucca filamentosa* L.), and coran bean (*Erythrina herbacea* L.).

Survey and Landscape Plan

Referred to the client by their architect, Ed Pilkington of Lake Wales, we started analyzing the site long before construction began. We began with a survey of existing plant material by making transects at 10-ft intervals through the site. Included in the survey along with trees down to 3-inch diameter were shrub specimens, shrub masses, interesting species and dominant ground covers.

The next task was to roughly stake the proposed home siting and accompanying site structures such as driveway, walks, walls, patios, etc. At this time the impact on existing vegetation could be assessed with respect to design approach. A large house on a small lot, this one just fit into setback restraints on all corners. It became evident that several large oaks and hickories as well as silver buckthorn, rusty lyonia, scrub wild olive and palmetto were to be sacrificed, but a considerable amount of varied and interesting material could be preserved. Large masses of blackhaw (*Viburnum obovatum*), palmetto (*Serenoa repens* (Bartr.) Small), beautyberry (*Callicarpa americana* L.), little blueberry (*Vaccineum darrowi* Camp), and coral bean (*Erythrina herbacea* L.) could be preserved. The goal was to leave entire systems intact with no soil disturbance. By doing this many existing herbaceous perennials and vines such as dayflower (*Commelina erecta* L.), butterfly weed (*Asclepias tuberosa* L.), ruellia (*Ruellia caroliniensis* (J.F. Gmel.) Steud.), leather flower (*Clematis reticutata* Walt.), Carolina yellow jasmine (*Gelsemium sempervirens*), and coral honeysuckle (*Lonicera sempervirens*) were saved giving color to the landscape.

A major problem in any construction in virgin ecosystems is unenlightened, inadvertant, or deliberate destruction of vegetation. Landscape architect, building architect, and the client all pressed for minimal disturbance while giving building contractor fair access to the site. The architect made a 5-ft maximum foundation clearing part of his specifications. The landscape architect outlined areas of critical concern to building contractor and the client while explaining the value of extra effort in protecting those areas. The client made it very clear to the building contractor that he was responsible for carrying out the architect's and landscape architect's plans. The contention by some builders that reduced site clearing adds to the cost of building may or may not be justified depending on size and situation of the site.

The landscape plan conceived included the redesign of architect's planned driveway and several masonry landscape walls to allow for a better approach to the house, more maneuverable vehicle space and the preservation of valuable plant material. Where the after-construction grade would require fill around the home, stone tree wells and terraced steps were designed to make it possible to save affected trees and understory. Free flowing bed lines left large areas completely untouched, effectively tied single trees or small groups together, and kept necessary sodding to a minimum. Some edge enhancement of the natural areas in prominent view from the house was designed using primarily materials indigenous to the area, but not found growing on the site. Almost all plantings designed used plant materials native to central Florida and from similar ecosystems.

Site Clearing and Landscape Installation

Mechanical clearing of the site was confined to the area inside of a line drawn 5 ft around the outside perimeter of the foundation. The rest of the site clearing was accomplished with hand tools, including chainsaws. Those areas that were thick with cherry laurel trees or were congested with smilax vines and many finger sized trees were thinned out. Views were opened to the golf course and street by raising the canopy up to a 6-foot minimum height, but without removing any large tree mass or sacrificing privacy. Some filling of areas along the driveway made grading for adjacent sod areas easy and also an unplanned tree well necessary to protect 2 oaks very important in the perspective view looking from the house out. The stone tree well has caused some erosion under the drive edge which will be repaired by pumping concrete into the void beneath the drive.

New landscaping was primarily needed immediately around the house. These plantings ranged from very informal fern, soft rush, wax myrtle, and coontie clusters on the east side to a very formal parterre garden around the south-side patio. More exotic plant species wre used at the front entrance than anywhere else on the site due in part because of the size and quantities of desired natives at that time. Some 3- to 4-ft blackhaw (*Viburnum obovatum*) re-

moved from the area for foundation clearing prior to clearing were relocated back on the site from the holding nursery. All other native plant material had been grown in the nursery from seed or cuttings. Pine straw mulch at a depth of 1 to 3 inches was used as mulch on all natural and newly planted areas.

Maintenance requires initial control of weeds in areas disturbed and where irrigation has encroached on natural areas. Irrigation was kept out of the natural areas to prevent primary weedy species population explosion.

Conclusion

The Sammons homesite is a small one, less than ½ acre. Because of the large percentage of mature natural material preserved, they enjoy privacy from the adjacent golf course and building lots. The mature canopy and understory provide solar buffer in the summer and wind buffer in the winter. The color and interest provided by the native plants keeps the landscape in constant prominence. These benefits and more are gratifying, but the realization that irreplaceable habitat and ecosystem was saved is most gratifying.

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WOODY ORNAMENTAL TEST PROGRAM AT THE WALT DISNEY WORLD NURSERY

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Abstract. **The WALT DISNEY WORLD Nursery is currently testing woody ornamentals for the central Florida area. Many of these shrubs and trees are obtained from state and county arboretums, as well as the National Arboretum in Washington, D. C. Also, botanical gardens, plant collectors, and nurseries, both domestic and abroad, are used as plant sources.**

This plant material is evaluated at the Nursery and eventually planted in the "themed" landscapes. The woody ornamental test program has proven to be an invaluable tool in keeping the landscapes both authentic and innovative.

Central Florida is typically an area where many tropical plants are introduced and tested. This article deals with more of the temperate plants that can survive here, and often times thrive through proper cultivar selection.

National Arboretum Woody Ornamentals

One of the organizations that is heavily involved in cultivar selection is the National Arboretum in Washington, D.C. Through their hybridization program, new selections are sent out and evaluated by nurseries, botanical gardens, and universities. WALT DISNEY WORLD Co. is 1 of 90 such cooperators participating nationally (2).

The National Arboretum sends the plant material in the form of bare root cuttings. these are stepped up into pots and eventually planted in the field after reaching proper size. The plants are evaluated for a period of 3 to 5 years. A pictorial as well as cultural file is maintained on each plant. Two to 3 slides aree taken per year to monitor seasonal changes. Fertilization rates and times are also noted as well as specific pest problems. Currently WALT DISNEY WORLD Nursery has 53 plants in the field representing 22 different plant species (Table 1).

Two of the National Arboretum genera have performed particularly well, *Quercus* and *Pyracantha.* Indeed, *Quercus salicina* fits the central Florida criteria for" an evergreen tree that doesn't freeze" mold. Also because of

Table 1. National arboretum woody ornamentals grown at the WALT DISNEY WORLD Co. nursery.

Botanical Name	Common name	Quantity	Adaptation for Central Florida
Aesulus sylvatica NA 48505	Norse Chestnut	1	Poor
Aphananthe aspera NA 472200	Muku Tree	2	Fair
Callicarpa japonica NA51283	Beautyberry	3	Good
Carpinus laxiflora NA 51320	Hornbeam	2	Poor
Corylopsis sinensis NA 49113	Winter Hazel	1	Good
Crataegus wilsonii NA 49152	Hawthorn	1	Fair
Ilex attenuata Sunny Foster NA 28309	Holly	2	Good
Ilex Clusterberry NA 25311	Holly	1	Poor
Magnolia X *Galaxy* NA 28352	Magnolia	2	Fair
Photinia beauverdiana Sabe 1875 NA 49369	Photinia	3	Good
Photinia beauverdiana Sabe 1583 NA 49368	Photinia	3	Good
Pyracantha crenulata *NA 49404*	*Pyracantha*	*2*	*Excellent*
Pyracantha fortuneana	Pyracantha	2	Excellent
Pyracantha hybrid	Pyracantha	10	Excellent
Pyracantha hybrid NA 48420	Pyracantha	3	Excellent
Pseudotsuga wilsoniana NA 46455	Fir	1	Good
Quercus mongolica Grosseserrata NA 51220	Mongolian Oak	1	Poor
Quercus salicina NA 45218	Oak	3	Excellent
Styrax japonicus NA 45262	Japanese Snowball	1	Good
Viburnum erosum NA 45179	Viburnum	2	Fair
Viburnum sel NA 43148	Viburnum	4	Poor
Weigela hortensis NA 51344	Weigela	3	Fair