

*A Floristic Evaluation of the Natural Plant Communities and Grounds  
Occurring at The Key West Botanical Garden, Stock Island,  
Monroe County, Florida*

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## **Introduction**

The Key West Botanical Garden (KWBG) is located at 5210 College Road on Stock Island, Monroe County, Florida. It is a 7.5 acre conservation area, owned by the City of Key West. The KWBG requested that The Institute for Regional Conservation (IRC) conduct a floristic evaluation of its natural areas and grounds and to provide recommendations.

## **Study Design**

On August 9-10, 2005 an inventory of all vascular plants was conducted at the KWBG. All areas of the KWBG were visited, including the newly acquired property to the south. Special attention was paid toward the remnant natural habitats. A preliminary plant list was established. Plant taxonomy generally follows Wunderlin (1998) and Bailey *et al.* (1976).

## **Results**

Five distinct habitats were recorded for the KWBG. Two of which are human altered and are artificial being classified as *developed upland* and *modified wetland*. In addition, three natural habitats are found at the KWBG. They are *coastal berm* (here termed *buttonwood hammock*), *rockland hammock*, and *tidal swamp* habitats.

### *Developed and Modified Habitats*

#### *Garden and Developed Upland Areas*

The developed upland portions include the maintained garden areas as well as the cleared parking areas, building edges, and paths. These areas have modified soils which have been scraped and disturbed and some areas have spoil or fill added to them. The garden area is dominated by a number of cultivated native and exotic plants and includes a butterfly garden. In addition, many cultivated exotic species were observed to be reproducing in this area, the most common of which was red sandalwood (*Adenanthera pavonina*). Other developed areas predominantly contain ruderal herbs both native and exotic with a few landscaped trees and shrubs.

#### *Modified Wetland Areas*

The modified wetland areas are the ponds within the maintained garden area. There are two types - a rectangular water feature and brackish ponds surrounded by buttonwoods (*Conocarpus erectus*). The rectangular water feature is found within the courtyard of the KWBG and solely occupies cultivated material. The buttonwood ponds are modified natural features that once existed as a brackish to seasonally fresh water habitat. Typically these ponds hold an understory of leather fern (*Acrostichum danaeifolium*) and saw-grass (*Cladium jamaicense*), with an overstory of buttonwoods on the edges. These ponds are located along the northern edge of the planned garden area.

## *Natural Habitats*

### *Rockland Hammock*

The Florida Natural Areas Inventory description for this plant community is: *Flatland with limestone substrate; mesic; subtropical; rare or no fire; mixed tropical hardwoods, often with live oak* (Florida Natural Areas Inventory, 2005). This habitat is important as it is the most diverse subtropical forest in the continental U.S. and is essential to migratory birds and local wildlife, many of which are rare and only found there.

The rockland hammock within the KWBG is of a fairly low elevation and has been only slightly modified by human use. At one time areas were dominated by Brazilian-pepper (*Schinus terebinthifolius*), but these trees have recently been removed or destroyed. Dominant native trees at the KWBG are subtropical and include gumbo limbo (*Bursera simaruba*), sea grape (*Coccoloba uvifera*), lancewood (*Ocotea coriacea*), pigeon plum (*Coccoloba diversifolia*), and poisonwood (*Metopium toxiferum*). Dominant native shrubs are Florida thatch palm (*Thrinax radiata*), white stopper (*Eugenia axillaris*), and snowberry (*Chiococca alba*). Few native herbs occupy this habitat, but the most prevalent herbs are rouge plant (*Rivina humilis*) and blue paspalum (*Paspalum caespitosum*). Although the hammock is dominated by natives now, several species from the garden area were observed to be invading this habitat including black calabash (*Crescentia cujete*), bowstring-hemp (*Sansevieria hyacinthoides*), night blooming cereus (*Hylocereus undatus*), Mauritius-hemp (*Furcraea foetida*), leadtree (*Leucaena leucocephala*), and Indian laurel fig (*Ficus microcarpa*).

### *Buttonwood Hammock (cf. Coastal Berm)*

The Florida Natural Areas Inventory description for coastal berm is: *Old bar or storm debris with sand/shell substrate; xeric-mesic; subtropical or temperate; rare or no fire; buttonwood, mangroves, and/or mixed halophytic herbs and/or shrubs and trees* (Florida Natural Areas Inventory, 2005). This habitat is important to rare epiphytic plant life and often being an ecotone (a transitional zone between habitats) is essential to migratory birds and local wildlife.

In the case of the KWBG, the buttonwood hammock areas are ecotones between the rockland hammock and modified wetland or between the rockland hammock and tidal swamp. The dominant native tree at the KWBG is buttonwood (*Conocarpus erectus*). Shrubs are not common here but there are occasional Spanish stopper (*Eugenia foetida*) and saffronplum (*Sideroxylon celastrinum*). A common native herb here is yellow joyweed (*Alternanthera flavescens*). Invasive exotics are at relatively low density and include Washington fan palm (*Washingtonia robusta*), devil's-backbone (*Kalanchoe daigremontiana*), and Australian umbrellatree (*Schefflera actinophylla*). Brazilian-pepper (*Schinus terebinthifolius*) once was common here, but was removed or destroyed prior to this survey.

### *Tidal Swamp*

The Florida Natural Areas Inventory description for this plant community is: *Expansive intertidal and supratidal area occupied primarily by woody vascular macrophytes (e.g., black mangrove, buttonwood, red mangrove, and white mangrove); may include various epiphytes and epifauna* (Florida Natural Areas Inventory, 2005). It is an important plant community as it provides a buffer during storms and tidal surges and is also important as a nursery for developing sea life, including many important recreational and commercial species.

A portion of the KWBG contains relatively undisturbed tidal swamp. This plant community is dominated by three or four native tree species including red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*), and buttonwood (*Conocarpus erectus*). No native shrubs were observed. Two native herbs observed are silver sea-oxeye daisy (*Borrchia frutescens*) and perennial sea-purslane (*Sesuvium portulacastrum*). Plants observed invading this habitat include: Australian-pine (*Casuarina equisetifolia*), Alexandrian laurel (*Calophyllum inophyllum*), tropical almond (*Terminalia catappa*) and Brazilian-pepper (*Schinus terebinthifolius*).

### *Vascular Plants*

A preliminary list of all vascular plants observed at the KWBG is provided in Appendix 1. A preliminary list of all vascular plants with rankings arranged by habitat is provided in an accompanying electronic database. Origin (nativity) and cultivated status as well as state, IRC, and FLEPPC rankings are also provided in this database.

A total of 280 vascular plant taxa were recorded for the KWBG. Of these, 149 are presumed native to Stock Island. Of these six were observed in cultivation only, and 20 were ruderals growing only in disturbed areas. Within these 149 native species occurring at the KWBG, 16 are listed as threatened and 16 are listed as endangered by the state of Florida. Four are listed as critically imperiled in South Florida\* by IRC (Gann *et al.*, 2005a).

The majority of the native plants were found in the native habitats, however most of the listed native plants were cultivated in the garden area. Locations of naturally occurring (not solely cultivated) listed native plants are provided (see table 1 on page 4). Also included in table 1 and this report is the listing of a rare hairy form of *Guapira discolor* which needs special attention discussed in the recommendations section of this report. A map is provided of those rare plants possessing discrete locations at the KWBG (see figure 1 on page 5). Of the state threatened taxa, all but nine are strictly cultivated at the KWBG. Of the state endangered taxa, all but five are solely cultivated at the KWBG. All IRC ranked Critically Imperiled in South Florida taxa were in cultivation at the KWBG (see table 2 on page 6).

In addition to the 149 native species, 26 cultivated species which are native to elsewhere in Florida but not to Stock Island, were also recorded (see accompanying electronic database). Of these 26, two are potentially invasive and pose a threat to the integrity of the natural areas; they are mahogany (*Swietenia mahagoni*) and bitterbush (*Picramnia pentandra*). Within the 26 species, 14 are state listed and/or IRC ranked as extirpated or critically imperiled (see table 3 on page 7).

A total of 105 non native species were recorded for the KWBG. Of these 26 were observed invading intact natural plant communities, 42 were cultivated only and showed no potential invasive threat, 16 were potentially invasive to the intact natural plant communities, and 21 were ruderal species. A total of 32 Florida Exotic Pest Plant Council (FLEPPC) ranked species were observed: Eighteen from Category I and 14 from Category II. It should be noted that pitch-apple (*Clusea rosea*) and Geigertree (*Cordia sebestena*) are listed as exotic, however these two species are currently under review for possible re-ranking by IRC staff.

\* South Florida is defined here as the ten southernmost counties in the state.

Table 1

## Rare Vascular Plants Naturally Occurring at Key West Botanical Garden

Scientific Name	Common Names	Latitude	Longitude	Estimated Population	Actual Population	Habitat/Notes
<i>Byrsonima lucida</i>	Locustberry			11-100		throughout rockland hammock
<i>Chamaesyce porteriana</i>	Porter's sandmat	24.57434	-81.74899	101-1000		On the north side of the KWBG near the water treatment plant growing along the edge of a mosquito ditch in rockland hammock.
<i>Chrysophyllum oliviforme</i>	Satinleaf			11-100		throughout rockland hammock
<i>Cordia globosa</i>	Butterflybush, Curacao bush			11-100		throughout rockland hammock
<i>Crossopetalum rhacoma</i>	Rhacoma, Maidenberry			11-100		throughout rockland hammock
<i>Drypetes diversifolia</i>	Milkbark, Whitewood			11-100		throughout rockland hammock
<i>Gossypium hirsutum</i>	Wild cotton, upland cotton	24.57616	-81.4738	10-20		buttonwood hammock
<i>Guapira discolor</i> (hairy form)	Hairy blolly	24.57367	-81.74978	1	1	One large tree near Botanical Way and offices (in the restored hammock of the garden area)
<i>Opuntia stricta</i>	Erect prickly pear	24.57367	-81.74978	2	2	two small plants near Botanical Way and offices (in the restored hammock of the garden area)
<i>Paspalidium chapmanii</i>	Coral panicum	24.57509	-81.74818	20	20	rockland hammock
<i>Pteris bahmensis</i>	Bahama ladderbrake	24.57434	-81.74899	1	1	On the north side of the KWBG near the water treatment plant growing along the edge of a mosquito ditch in rockland hammock.
<i>Reynosia septentrionalis</i>	Darlingplum			11-100		throughout rockland hammock
<i>Smilax havanensis</i>	Havana greenbrier, Everglades greenbrier			11-100		throughout rockland hammock
<i>Solanum donianum</i>	Mullein nightshade	24.57509	-81.74818	40-50		Along the edge of Rockland Hammock and fenceline, on the south side of the rockland hammock area
<i>Thrinax radiata</i>	Green thatch palm, Florida thatch palm			101-1000		throughout rockland hammock
State and IRC rankings are provided in Appendix 1						

Figure 1  
Key West Botanical Garden Select Rare Plant Locations



Map prepared by Steven W. Woodmansee  
The Institute for Regional Conservation  
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[www.regionalconservation.org](http://www.regionalconservation.org)

0 25 50 100 150 200 Yards

Table 2			
Rare Vascular Plants native to the region (Lower Keys) and Cultivated at the site			
Scientific Name	Common Names	IRC Status	State Status
<i>Acanthocereus tetragonus</i>	Barbwire cactus, Dilldoe cactus		T
<i>Argusia gnaphalodes</i>	Sea-lavender, Sea-rosemary		E
<i>Bouyeria succulenta</i>	Smooth strongback, Bahama strongbark		E
<i>Byrsonima lucida</i>	Locustberry		T
<i>Calypttranthes pallens</i>	Spicewood, Pale lidflower		T
<i>Canella winterana</i>	Cinnamon bark, Pepper cinnamon		E
<i>Chrysophyllum oliviforme</i>	Satinleaf		T
<i>Coccothrinax argentata</i>	Florida silver palm		T
<i>Colubrina arborescens</i>	Coffee colubrina, Greenheart		E
<i>Cordia globosa</i>	Butterflybush, Curacao bush		E
<i>Crossopetalum rhacoma</i>	Rhacoma, Maidenberry		T
<i>Eugenia rhombea</i>	Red stopper	SF1	E
<i>Gossypium hirsutum</i>	Wild cotton, Upland cotton		E
<i>Guajacum sanctum</i>	Lignumvitae, Holywood lignumvitae	SF1	E
<i>Jacquinia keyensis</i>	Joewood		T
<i>Jacquemontia pentanthos</i>	Skyblue clustervine		E
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>	Wild dilly		T
<i>Myrcianthes fragrans</i>	Twinberry, Simpson's stopper		T
<i>Pithecellobium keyense</i>	Florida Keys blackbead		T
<i>Reynosa septentrionalis</i>	Darlingplum		T
<i>Senna mexicana</i> var. <i>chapmanii</i>	Bahama senna, Chapman's wild sensitive plant		T
<i>Thrinax morrisii</i>	Silver thatch palm, Brittle thatch palm		E
<i>Thrinax radiata</i>	Green thatch palm, Florida thatch palm		E
<i>Vallesia antillana</i>	Pearlberry, Tearshrub	SF1	E
<i>Zamia integrifolia</i>	Coontie, Florida arrowroot		C
<i>Zanthoxylum flavum</i>	West Indian satinwood, Yellowwood	SF1	E
T = Threatened by the state of Florida			
E = Endangered by the state of Florida			
SF1 = Critically Imperiled in South Florida by IRC			

Table 3			
Rare Vascular Plants not native to the region, yet native to Florida and Cultivated at the site			
Scientific Name	Common Names	IRC Status	State Status
<i>Acacia choriophylla</i>	Cinnecord	SFX	E
<i>Bourreria cassinifolia</i>	Pineland strongback	SF1	E
<i>Calypttranthes zuzygium</i>	Myrtle-of-the-river		E
<i>Colubrina elliptica</i>	Nakedwood, Soldierwood		E
<i>Crossopetalum ilicifolium</i>	Quailberry, Christmasberry		T
<i>Jacquemontia curtisii</i>	Pineland clustervine		T
<i>Opuntia corallicola</i>	Semaphore pricklypear	SF1	E
<i>Picramnia pentandra</i> *	Florida bitterbush	SF1	E
<i>Pisonia rotundata</i>	Smooth devilsclaws, Blolly	SF1	E
<i>Pseudophoenix sargentii</i>	Sargent's palm, Sargent's cherry palm	SF1	E
<i>Psychotria ligustrifolia</i>	Bahama wild coffee		E
<i>Sarracenia minor</i>	Hooded pitcherplant		T
<i>Swietenia mahagoni</i> *	West Indian mahogany		T
<i>Tripsacum floridanum</i>	Florida gamagrass		T
<i>Zanthoxylum coriaceum</i>	Biscayne prickly-ash	SF1	E
* Potentially invasive to the natural areas			
T = Threatened by the state of Florida			
E = Endangered by the state of Florida			
SFX = Extirpated in South Florida (from the wild)			
SF1 = Critically Imperiled in South Florida by IRC			

## **Recommendations**

### *Overview*

Botanical gardens are a valued resource for the public to both enjoy passive recreation as well as plant education. While many gardens pride themselves in having diverse arrays of rarely grown plants and/or a professionally designed landscape, The Key West Botanical KWBG is exceptional in that it possesses some of the last remaining natural areas in the City of Key West. Although Key West is the most revered historical city within the Florida Keys, almost all of the natural area once found in Key West has been destroyed (Gann *et al.* 2002). Citizens and tourists may have no idea of what Key West used to look like. At one time it was covered in diverse subtropical forest. This forest was important not only to the plant life, but also to local and migratory wildlife. It plays an important role in providing habitat for local plants and wildlife, educating the public, and promoting responsible landscaping. The Key West Botanical Garden is one of the last remaining refuges where one may observe a natural area in Key West. IRC recommends that measures be taken by the KWBG to help the citizens of Key West restore their native plant heritage.



It should be noted that the recommendation guidelines provided here are specific to the KWBG. General recommendations for maintaining native plant habitats and rare plant species may be found in Chapter 3 of Rare Plants of South Florida: Their History, Conservation, and Restoration by Gann et al (2002), made available to the general public at [www.regionalconservation.org](http://www.regionalconservation.org). In addition the Natives For Your Neighborhood website provides data on plants and habitats appropriate to Stock Island (by zipcode) (Gann *et al.* 2005b).

#### *Garden and Developed Upland Areas*

Most of the KWBG encompasses planned landscaped areas with various themes. Many cultivated native plant species are found in this area, many of which are endemic to Florida, although some are outside their range here. In addition, a variety of foreign cultivated material has been grown throughout the KWBG's history. Many of these plants still persist today. It is recommended that the main goal of the KWBG be to ensure that the surrounding natural area, both within and outside the KWBG, not be adversely impacted by exotic invasive species. The first measure for the KWBG is to establish a monitoring policy for plant accessions (introductions) both for foreign plants as well as native plants outside their historic range. It is recommended that the KWBG staff closely monitor plant invasiveness, and if a plant is seen spreading into the natural areas, it is suggested that it be removed both from the natural area as well as from the planned garden. One way to ensure that the natural areas not be adversely impacted by garden plants is to landscape with plants historic to the region. Next, it is recommended that the KWBG remove all existing species which invade native plant habitats, both within the natural habitats as well as within the planned garden area. Provided within this report in appendix 2 are the Voluntary Codes of Conduct For Botanic Gardens and Arboreta (Center for Plant Conservation, 2002) which cover these issues.

Portions of the planned garden are being reverted back to rockland hammock. This is an excellent idea, and care should be taken to select natives for this region. In order to better select appropriate native plants, an excellent free resource for the KWBG to use is the Natives For Your Neighborhood website (Gann *et al.* 2005b). There, the KWBG staff can enter its zipcode, and a list of plants and habitats native to the region will be provided. Photographs, descriptions, and various educational information is also provided to better facilitate the KWBG's ability to recreate habitats. All restoration recommendations below are easily carried out using the Natives For Your Neighborhood website.

#### *Modified Wetland Areas*

First and foremost invasive plants surrounding or within these areas need to be removed (see accompanying database). In addition, it is recommended that appropriate native species be used when augmenting the area especially in the "buttonwood" ponds. Be sure to use brackish water tolerant species referable to *interdunal swale habitat*. A list for this habitat is found on the Natives for Your Neighborhood website (Gann *et al.* 2005b).

#### *Natural Habitats (including rockland hammock, buttonwood hammock, and tidal swamp)*

None of the natural habitats ought to be damaged or altered, and it is recommended that areas impacted by invasive exotic plants be restored. Restoration involves the removal of

these exotic species. In the case of wetlands, any spoil or debris upon which exotics are growing may be removed or restored as rockland hammock. It is recommended that each restored area be assessed to determine whether augmenting with appropriate native plant species is necessary.

### *Vascular Plants*

It is recommended that floristic inventories be conducted every five years in order to track changes in the composition of the flora at the KWBG. It is recommended that special care be taken to not adversely impact any vascular plants native to the lower Florida Keys within the grounds. Additional care should be focused on the rare plants listed in this report. It is recommended that state, IRC, and FLEPPC rankings of all species recorded for the KWBG be checked every two years or so.

### *Rare Plants*

#### *Rare Plants naturally occurring at the KWBG*

Fifteen rare vascular plants were recorded as naturally occurring at the KWBG (Table 1). Most of these species were observed in intact natural areas, but some were observed persisting in the maintained garden area. Detailed descriptions for each are provided below.

#### Bahama ladderbrake (*Pteris bahamensis*)

This species is listed as threatened by the State of Florida (Florida Natural Areas Inventory 2005) and as rare in South Florida by IRC (Gann *et al.* 2005a). It is endemic to South Florida and the Bahamas where it grows on limestone outcrops in open areas of rockland hammock, marl prairie, sinkholes, and pinelands. One clump was recorded on the northside of the KWBG near the water treatment plant growing along the edge of a mosquito ditch in rockland hammock. It is recommended that this area be surveyed on a quarterly per year basis, and areas surrounding this population should not be adversely impacted.

#### Butterflybush, Curacao bush (*Cordia globosa*)

This species is listed as endangered by the state of Florida and imperiled by IRC (Gann *et al.* 2005a). It is indigenous to South Florida and the Caribbean where it is found in open areas of rockland hammock (Gann *et al.* 2005a). It was observed throughout the rockland hammock at the KWBG. Annual monitoring is recommended for this species.

#### Coral panicum (*Paspalidium chapmanii*)

This species is listed as endangered by the state of Florida and imperiled by IRC (Gann *et al.* 2005a). It is indigenous to South Florida and the Caribbean where it is found in coastal berm, coastal rock barren, rockland hammock, and shell mound (Gann *et al.* 2005a). Twenty plants were observed in rockland hammock. Annual monitoring is recommended for this species.

Darlingplum (*Reynosa septentrionalis*)

This species is listed as threatened by the state of Florida and rare by IRC (Gann *et al.* 2005a). It is indigenous to South Florida, Cuba, and the Bahamas where it is found in coastal berm, coastal strand, pine rockland, and rockland hammock (Gann *et al.* 2005a). It was observed throughout the rockland hammock at the KWBG. Annual monitoring is recommended for this species.

Erect prickly-pear (*Opuntia stricta*)

This species is listed as threatened by the state of Florida and rare by IRC (Gann *et al.* 2005a). It is indigenous to the southeastern United States and the Caribbean where it is found in a variety of coastal communities (Gann *et al.* 2005a). Two small plants were observed in the restored hammock of the garden area near Botanical Way and the office. Annual monitoring is recommended for this species. This cactus is attacked by an exotic moth (*Cactoblastis cactorum*) and upon monitoring, if present, plants should be treated with the bacterium *Bacillus thuringiensis* (Dipel®) (Bloem *et al.* 2005).

Green thatch palm, Florida thatch palm (*Thrinax radiata*)

This species is listed as endangered by the state of Florida and rare by IRC (Gann *et al.* 2005a). It is indigenous to South Florida and the Caribbean where it is found in coastal berm, maritime hammock, pine rockland, and rockland hammock (Gann *et al.* 2005a). It was observed throughout the rockland hammock at the KWBG. Annual monitoring is recommended for this species.

Hairy blolly (*Guapira discolor*, Hairy form)

Although this species is not state listed, this hairy form of blolly is rare. Once described as *Pisonia floridana* by the famous botanist John Kunkel Small, it was considered a species separate from *Guapira discolor*, and is distinguished in having pubescence (hair) on the leaves. This hairy form is known only from coastal berm and rockland hammocks of the middle and lower Florida Keys, and even though it is now conspecific with hairless forms, care should be maintained in case possible future taxonomic revisions may consider it separate once again. A single tree was observed in the western part of the KWBG adjacent to the fenceline about 30 meters west of the office.

Havana greenbrier (*Smilax havanensis*)

This species is listed as threatened by the state of Florida and rare by IRC (Gann *et al.* 2005a). It is indigenous to South Florida, Cuba, and the Bahamas where it is found in coastal strand, marl prairie, pine rockland, and rockland hammock (Gann *et al.* 2005a). It was observed throughout the rockland hammock at the KWBG. Annual monitoring is recommended for this species.

Locustberry (*Byrsonima lucida*)

This species is listed as threatened by the state of Florida and rare by IRC (Gann *et al.* 2005a). It is indigenous to South Florida and the Caribbean where it is found in coastal berm, marl prairie, pine rockland, and rockland hammock (Gann *et al.* 2005a). It was observed throughout the rockland hammock at the KWBG. Annual monitoring is recommended for this species.

Milkbark, Whitewood (*Drypetes diversifolia*)

This species is listed as endangered by the state of Florida and imperiled by IRC (Gann *et al.* 2005a). It is indigenous to South Florida, Cuba, and the Bahamas where it is found in rockland hammock (Gann *et al.* 2005a). It was observed throughout the rockland hammock at the KWBG. Annual monitoring is recommended for this species.

Mullein nightshade (*Solanum donianum*)

This species is listed as threatened by the state of Florida and rare by IRC (Gann *et al.* 2005a). It is indigenous to South Florida and the Caribbean where it is found in coastal berm, marl prairie, and pine rockland (Gann *et al.* 2005a). It was observed along the edge of rockland hammock and fenceline, on the south side of the rockland. This species should be monitored on an annual basis and special attention should be made to not adversely impact the surrounding natural area.

Porter's sandmat (*Chamaesyce porteriana*)

This species is listed as endangered by the State of Florida (Florida Natural Areas Inventory 2005) and as rare by IRC (Gann *et al.* 2005a). It is endemic to South Florida where it grows in open areas of rockland hammock, coastal rock barrens, marl prairie, and pinelands (Gann *et al.* 2005a). Over 100 individuals were observed on the northside of the KWBG near the water treatment plant growing along the edge of a mosquito ditch adjacent to disturbed rockland hammock. Quarterly monitoring is recommended for this species.

Rhacoma, Maidenberry (*Crossopetalum rhacoma*)

This species is listed as threatened by the state of Florida and rare by IRC (Gann *et al.* 2005a). It is indigenous to Sarasota County, South Florida, and the Caribbean where it is found in maritime hammock, pine rockland, and rockland hammock (Gann *et al.* 2005a). It was observed throughout the rockland hammock at the KWBG. Annual monitoring is recommended for this species.

Satinleaf (*Chrysophyllum oliviforme*)

This species is listed as threatened by the state of Florida and as rare by IRC (Gann *et al.* 2005a). It is indigenous to Central and South Florida, and the Caribbean where it is found in pine rockland and hammock communities (Gann *et al.* 2005a). It was observed throughout the rockland hammock at the KWBG. Annual monitoring is recommended for this species.

Wild cotton, upland cotton (*Gossypium hirsutum*)

This species is listed as threatened by the state of Florida and rare by IRC (Gann *et al.* 2005a). It is indigenous to Florida, and the Caribbean where it is found in coastal berm, coastal rock barren, rockland hammock, and shell mound (Gann *et al.* 2005a). It was observed throughout the buttonwood hammock at the KWBG. Annual monitoring is recommended for this species.

*Rare Plants Native to the region, Cultivated at the KWBG*

Twenty-six state and IRC listed species were recorded as cultivated at the KWBG (Table 3). A few were observed to be cultivated within the natural areas, but most were observed in the garden area. These species are native to the region, and are an excellent teaching tool to the public to show some of the most rare and beautiful natives that once occurred or rarely

occur in Key West. Being native to the region, these species pose no threat to the integrity of the natural areas found at the KWBG.

#### *Rare Plants Native to Florida, but not the region, Cultivated at the KWBG*

Sixteen species of vascular plants native to Florida but not native to the lower Florida Keys are in cultivation at the KWBG (Table 4). Two of these species (West Indian Mahogany and Bitterbush) are potentially invasive to the natural areas. It is recommended that they be removed to ensure that they do not invade these areas as they are known to spread. Other species do not apparently pose a threat to the natural areas, and may continue to be incorporated in the landscape at the KWBG. When educating the public, it should be noted that these species are not native to the region, but are rare elsewhere in Florida. Due to the likelihood of their spreading, it is recommended that efforts be made to remove them.

#### *Exotic Invasive plants*

The KWBG should continue its implementation of an ongoing exotic pest plant control program. When controlling invasive exotics, be sure to provide maps of locations and educational material on rare plants to removal crews. Establish long-term monitoring and management programs after initial control efforts are concluded (Gann *et al.* 2002). It is also recommended that the KWBG adhere to the Voluntary Codes of Conduct For Botanic Gardens and Arboreta (Center for Plant Conservation, 2002; appendix 2). In addition, any plants listed by FLEPPC or any plants not native to the lower Florida Keys observed invading intact natural areas should be removed immediately.

#### *Ruderal plants*

No special attention need be made to ruderal species occurring at the KWBG, unless they are state listed. If any rare ruderal species be encountered in the future, efforts should be made to protect them by determining their needs, and setting aside these areas from planned landscape. (See electronic database for a list of ruderal species).

#### *Restoring the Historical and Extirpated Vascular Plants within the City of Key West*

The following recommendations are based on data published in Rare Plants of South Florida: Their History, Conservation, and Restoration by Gann et al (2002). As mentioned in the overview, Key West at one time was a botanical treasure trove of subtropical native plant species. Today most of it has been destroyed. It is highly recommended that the KWBG implement a plan to obtain and maintain *ex situ* populations of species extirpated from Key West. It is also recommended that the KWBG restore these, and other rare native species, on its grounds as part of the newly recreated rockland hammock. As mentioned before, appropriate methodology for implementing such actions may be obtained in Gann *et al.* (2002) and Gann *et al.* 2005b.

The KWBG has already incorporated many critically imperiled vascular plants known from the city of Key West. These include Yellowwood (*Zanthoxylum flavum*), Red stopper (*Eugenia rhombea*), and Lignumvitae (*Guajacum sanctum*). Rather than to only present these species in a garden setting, they and others should be included in the KWBG's rockland hammock. Places for restoration include areas of disturbance within the rockland hammock at the

KWBG (such as those areas with exotic removal) as well as developed upland areas. When selecting areas for restoring rockland hammock, be sure and choose areas of the highest elevation within the developed upland portions of the KWBG.

The KWBG also has an excellent opportunity to incorporate within their rockland hammock restoration and *ex situ* collections other rare plants known from Key West, some of which no longer exist there or even elsewhere in The United States. A set of priorities for restoring lost vascular plant species should be set in the following two-tiered order:

1. Plants still in existence, but rare in South Florida include: Rough strongback (*Bourreria radula*), pepperbush (*Croton humilis*), big sandbur (*Cenchrus myosuroides*), Florida flatsedge (*Cyperus floridanus*), limestone flatsedge (*Cyperus fuliginens*), bearded flatsedge (*Cyperus squarrosus*), and Swartz's snoutbean (*Rhynchosia swartzii*).
2. Plants extirpated from South Florida which still remain elsewhere include: Slimbristle sandbur (*Cenchrus brownii*), bunch cutgrass (*Leersia monandra*), love grass tridens (*Tridens eragrostoides*), Florida amaranth (*Amaranthus floridanus*), Key West heliotrope (*Heliotropium fruticosum*), and clubspike cardinal airplant (*Tillandsia fasciculata* var. *clavispica*).

### **Summary**

The Key West Botanical Garden is on an excellent course. Continuing to preserve its native plant habitat and using native plants in the landscaping is extremely invaluable for both conservation as well as education. If the above recommendations are implemented, key natural areas will be protected while creating beautiful landscaping for people around the world to enjoy. It will also serve as a model of responsible landscaping that may influence others to act accordingly in an effort to preserve our native plant heritage.

### **References**

- Bailey, L.H., E.Z. Bailey, and staff of Liberty Bailey Hortorium. 1976. Hortus Third, A concise Dictionary of Plants Cultivated in the United States and Canada. Cornell University, Ithaca, NY.
- Bloem, S., R. Mizell III, K. Bloem, S. Hight, and J. Hight. 2005. Laboratory Evaluation of Insecticides for Control of the Invasive Cactus Moth *Cactoblastis cactorum* (Lepidoptera: Pyralidae). Florida Entomologist, Submitted June 2005 to be published.
- Center for Plant Conservation. 2002. Voluntary Codes of Conduct For Botanic Gardens and Arboreta. <http://www.centerforplantconservation.org/invasives/gardensN.html>. Center for Plant Conservation, St. Louis.
- FLEPPC. 2005. List of Florida's Invasive Species. Florida Exotic Pest Plant Council. Internet: <http://www.fleppc.org/05list.htm>
- Florida Natural Areas Inventory. 2005. Florida Natural Areas Inventory website. <http://www.FNAI.org>. Florida Natural Areas Inventory, Tallahassee, Florida.

Gann, G.D., K.A. Bradley, and S.W. Woodmansee. 2002. Rare Plants of South Florida: Their History, Conservation, and Restoration. The Institute for Regional Conservation, Miami, Florida.

Gann, G.D., K.A. Bradley and S.W. Woodmansee. 2005a. The Floristic Inventory of South Florida Database. <http://www.regionalconservation.org>. The Institute for Regional Conservation, Miami.

Gann, G.D., M.E. Abdo, J.W. Gann, G.D. Gann, Sr., S.W. Woodmansee, K.A. Bradley, E. Verdon and K.N. Hines. 2005b. Natives For Your Neighborhood. <http://www.regionalconservation.org>. The Institute for Regional Conservation, Miami.

Wunderlin, R.P. 1998. Guide to the Vascular Plants of Florida. Gainesville, University Press of Florida.

Appendix 1  
 Preliminary List of the Vascular Plants of  
**The Key West Botanical Garden**



The Institute for Regional Conservation  
 Miami, Florida

Compiled from field observations made by Steven W. Woodmansee on August 9 & 10, 2005.

**Dicots**

<u>Acanthaceae</u>		
CE, I	<i>Ruellia tweediana</i>	Britton's wild petunia, Mexican bluebell
<u>Aizoaceae</u>		
	<i>Sesuvium portulacastrum</i>	Perennial sea-purslane, Shoreline seapurslane
<u>Amaranthaceae</u>		
	<i>Alternanthera flavescens</i>	Yellow joyweed
E	<i>Amaranthus viridis</i>	Slender amaranth
<u>Anacardiaceae</u>		
	<i>Metopium toxiferum</i>	Poisonwood, Florida poisontree
E, I	<i>Schinus terebinthifolius</i>	Brazilian-pepper
<u>Annonaceae</u>		
	<i>Annona glabra</i>	Pond-apple
<u>Apiaceae</u>		
	<i>Hydrocotyle umbellata</i>	Manyflower marshpennywort
<u>Apocynaceae</u>		
C, EN, SF1	<i>Vallesia antillana</i>	Pearlberry, Tearshrub
<u>Araliaceae</u>		
CE	<i>Polyscias guilfoylei</i>	Frosted aralia, Geraniumleaf aralia
E, I	<i>Schefflera actinophylla</i>	Australian umbrellatree
<u>Aristolochiaceae</u>		
CE	<i>Aristolochia</i> sp.	Dutchman's-pipe
<u>Asclepiadaceae</u>		
CE	<i>Asclepias curassavica</i>	Scarlet milkweed, Bloodflower
CE	<i>Calotropis gigantea</i>	Giant milkweed
	<i>Sarcostemma clausum</i>	Whitevine, White twinevine
<u>Asteraceae</u>		
CE	<i>Aster dumosus</i>	Rice button aster
	<i>Bidens alba</i> var. <i>radiata</i>	Spanish-needles
	<i>Borrchia frutescens</i>	Silver sea-oxeye-daisy, Bushy seaside oxeye
	<i>Conyza canadensis</i> var. <i>pusilla</i>	Dwarf Canadian horseweed



E	<i>Emilia sonchifolia</i>	Lilac tassleflower
	<i>Flaveria trinervia</i>	Annual yellowtop, Clustered yellowtops
CE	<i>Gaillardia pulchella</i>	Blanketflower, Firewheel
CE	<i>Helianthus debilis</i>	East Coast dune sunflower
	<i>Melanthera nivea</i>	Snow squarestem
	<i>Pluchea carolinensis</i>	Cure-for-all
CE	<i>Solidago</i> sp.	Goldenrod
E	<i>Tridax procumbens</i>	Brittleweed, Coatbuttons
<u>Avicenniaceae</u>		
	<i>Avicennia germinans</i>	Black mangrove
<u>Bignoniaceae</u>		
CE, SF1	<i>Amphitecna latifolia</i>	Black-calabash
CE	<i>Crescentia cujete</i>	Black calabash
CE	<i>Kigelia pinnata</i>	Sausage tree
CE	<i>Tabebuia bahamensis</i>	Bahama tabebuia
CE	<i>Tabebuia heterophylla</i>	White-cedar
<u>Boraginaceae</u>		
C, EN	<i>Argusia gnaphalodes</i>	Sea-lavender, Sea-rosemary
CE, EN, SF1	<i>Bourreria cassinifolia</i>	Pineland strongback
C, EN	<i>Bourreria succulenta</i>	Smooth strongback, Bahama strongbark
C, EN	<i>Cordia globosa</i>	Butterflybush, Curacao bush
CE	<i>Cordia sebestena</i>	Orange Geigertree, Largeleaf Geigertree
	<i>Heliotropium angiospermum</i>	Scorpionstail
	<i>Heliotropium curassavicum</i>	Seaside heliotrope, Salt heliotrope
<u>Brassicaceae</u>		
	<i>Lepidium virginicum</i>	Poor-man's-pepper, Virginia pepperweed
CE	<i>Rorippa teres</i>	Southern marsh yellowcress
<u>Burseraceae</u>		
C	<i>Bursera simaruba</i>	Gumbo-limbo
<u>Cactaceae</u>		
C, T	<i>Acanthocereus tetragonus</i>	Barbwire cactus, Dildoe cactus
E	<i>Hylocereus undatus</i>	Nightblooming cereus
CE, EN, SF1	<i>Opuntia corallicola</i>	Semaphore pricklypear
T	<i>Opuntia stricta</i>	Erect pricklypear
CE	<i>Selenicereus pteranthus</i>	Snake cactus, Princess-of-the-night
<u>Canellaceae</u>		
C, EN	<i>Canella winterana</i>	Cinnamon bark, Pepper cinnamon
<u>Capparaceae</u>		
C	<i>Capparis cynophallophora</i>	Jamaica caper-tree
C	<i>Capparis flexuosa</i>	Limber caper, Bayleaf capertree
<u>Casuarinaceae</u>		
E, I	<i>Casuarina equisetifolia</i>	Australian-pine, Horsetail casuarina
<u>Celastraceae</u>		
CE, T	<i>Crossopetalum ilicifolium</i>	Quailberry, Christmasberry
C, T	<i>Crossopetalum rhacoma</i>	Rhacoma, Maidenberry

### Chrysobalanaceae

C *Chrysobalanus icaco* Coco-plum

### Clusiaceae

E, I *Calophyllum inophyllum* Beautyleaf, Alexandrian laurel  
CE *Clusia rosea* Pitch-apple

### Combretaceae

CE *Bucida buceras* Common black-olive  
*Conocarpus erectus* Buttonwood  
*Laguncularia racemosa* White mangrove  
E, II *Terminalia catappa* Tropical-almond, West Indian-almond

### Convolvulaceae

*Ipomoea indica* var. *acuminata* Ocean-blue morningglory  
CE, T *Jacquemontia curtisii* Pineland clustervine  
C, EN *Jacquemontia pentanthos* Skyblue clustervine

### Crassulaceae

E *Kalanchoe daigremontiana* Devil's-backbone

### Cucurbitaceae

*Melothria pendula* Creeping-cucumber

### Euphorbiaceae

CE *Acalypha amentacea* subsp. *wilkesiana* Wilkes' copperleaf  
*Chamaesyce blodgettii* Limestone sandmat  
*Chamaesyce hirta* Hairy spurge, Pillpod sandmat  
*Chamaesyce hypericifolia* Eyebane, Graceful sandmat  
EN *Chamaesyce porteriana* Porter's sandmat  
CE *Codiaeum variegatum* var. *pictum* Garden-croton  
EN *Drypetes diversifolia* Milkbark, Whitewood  
E *Euphorbia graminea* Grassleaf spurge  
C *Gymnanthes lucida* Crabwood, Oysterwood  
CE *Phyllanthus acidus* Tahitian gooseberry tree  
E *Phyllanthus amarus* Gale-of-wind, Carry-me-seed  
E *Phyllanthus tenellus* Mascarene Island leafflower  
E *Phyllanthus tenellus* Mascarene Island leafflower  
*Poinsettia cyathophora* Paintedleaf, Fire-on-the-mountain

### Fabaceae

CE, EN, SFX *Acacia choriophylla* Cinnecord  
C *Acacia farnesiana* Sweet acacia  
CE, II *Adenantha pavonina* Red sandalwood, Red beardtree  
CE, I *Albizia lebeck* Woman's tongue, Rattlepod  
CE *Bauhinia* sp. Orchidtree  
CE *Brownea grandiceps* Rose of Venezuela, Scarlet flame bean  
CE *Caesalpinia* sp. Caesalpinnia  
CE *Calliandra* sp. Powderpufftree  
CE *Cassia fistula* Golden shower  
E *Crotalaria incana* Shakeshake  
CE *Delonix regia* Royal poinciana, Flamboyant  
*Desmanthus virgatus* Wild tantan  
*Desmodium incanum* Beggar's-ticks  
*Desmodium tortuosum* Dixie ticktrefoil  
*Galactia striata* Florida hammock milkpea

	<i>Galactia volubilis</i>	Downy milkpea
CE	<i>Gliricidia sepium</i>	Nicaraguan cocoa shade
E	<i>Indigofera spicata</i>	Creeping indigo, Trailing indigo
E	<i>Indigofera tinctoria</i>	True indigo
E, II	<i>Leucaena leucocephala</i>	White leadtree
CE	<i>Lysiloma sabicu</i>	Sabicu
E	<i>Macroptilium lathyroides</i>	Wild-bean, Wild bushbean
	<i>Neptunia pubescens</i>	Tropical-puff
C	<i>Piscidia piscipula</i>	Jamaica-dogwood, Florida fishpoison tree
C, T	<i>Pithecellobium keyense</i>	Florida Keys blackbead
	<i>Rhynchosia minima</i>	Least snoutbean
CE	<i>Senna alata</i>	Candlestick plant
C	<i>Senna ligustrina</i>	Privet senna, Privet wild sensitive plant
CE, T	<i>Senna mexicana</i> var. <i>chapmanii</i>	Bahama senna, Chapman's wild sensitive plant
CE	<i>Senna polyphylla</i>	Desert cassia, Twin senna
	<i>Sesbania herbacea</i>	Danglepod
CE	<i>Sophora tomentosa</i> var. <i>occidentalis</i>	
	<i>Stylosanthes hamata</i>	Pencilflower, Cheesytoes
CE	<i>Tamarindus indica</i>	Tamarind
	<i>Vigna luteola</i>	Cow-pea, Hairypod cowpea
<u>Flacourtiaceae</u>		
CE, II	<i>Flacourtia indica</i>	Governor's-plum
<u>Gentianaceae</u>		
	<i>Eustoma exaltatum</i>	Seaside gentian, Marshgentian
<u>Lauraceae</u>		
	<i>Ocotea coriacea</i>	Lancewood
CE	<i>Persea palustris</i>	Swamp bay
<u>Malpighiaceae</u>		
C, T	<i>Byrsonima lucida</i>	Locustberry
<u>Malvaceae</u>		
C, EN	<i>Gossypium hirsutum</i>	Wild cotton, Upland cotton
	<i>Herissantia crispa</i>	Bladdermallow
	<i>Sida abutilifolia</i>	Spreading fanpetals
	<i>Sida acuta</i>	Common wireweed, Common fanpetals
E, I	<i>Thespesia populnea</i>	Portiatree
<u>Meliaceae</u>		
CE, T	<i>Swietenia mahagoni</i>	West Indian mahogany
<u>Moraceae</u>		
	<i>Ficus aurea</i>	Strangler fig, Golden fig
C	<i>Ficus citrifolia</i>	Short-leaf fig, Wild banyan tree
CE, I	<i>Ficus microcarpa</i>	Laurel fig, Indian laurel
<u>Myricaceae</u>		
C	<i>Myrica cerifera</i>	Wax myrtle, Southern Bayberry
<u>Myrsinaceae</u>		
E, I	<i>Ardisia elliptica</i>	Shoe-button ardisia
C	<i>Ardisia escallonioides</i>	Marlberry
C	<i>Rapanea punctata</i>	Myrsine, Colicwood

### Myrtaceae

C, T	<i>Calyptranthes pallens</i>	Spicewood, Pale lidflower
CE, EN	<i>Calyptranthes zuzygium</i>	Myrtle-of-the-river
	<i>Eugenia foetida</i>	Spanish stopper, Boxleaf stopper
C, EN, SF1	<i>Eugenia rhombea</i>	Red stopper
C, T	<i>Myrcianthes fragrans</i>	Twinberry, Simpson's stopper
CE	<i>Pimenta dioica</i>	Allspice, Pimento

### Nyctaginaceae

	<i>Boerhavia diffusa</i>	Red spiderling, wineflower
C	<i>Guapira discolor</i>	Blolly, Beefree
CE, EN, SF1	<i>Pisonia rotundata</i>	Smooth devilsclaws, Blolly

### Olacaceae

	<i>Ximenia americana</i>	Hog-plum, Tallowwood
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### Oleaceae

C	<i>Forestiera segregata</i>	Florida privet, Florida swampprivet
E, I	<i>Jasminum fluminense</i>	Corky-stemmed jasmine
CE, II	<i>Jasminum sambac</i>	Arabian jasmine

### Passifloraceae

C	<i>Passiflora suberosa</i>	Corkystem passionflower
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### Phytolaccaceae

	<i>Rivina humilis</i>	Rougeplant
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### Polygonaceae

CE, II	<i>Antigonon leptopus</i>	Coral vine, Queen's jewels
	<i>Coccoloba diversifolia</i>	Pigeonplum, Tietongue
C	<i>Coccoloba uvifera</i>	Seagrape

### Portulacaceae

	<i>Portulaca oleracea</i>	Purslane, Little hogweed
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### Rhamnaceae

C, EN	<i>Colubrina arborescens</i>	Coffee colubrina, Greenheart
E, I	<i>Colubrina asiatica</i>	Latherleaf, Asian nakedwood
CE, EN	<i>Colubrina elliptica</i>	Nakedwood, Soldierwood
C	<i>Krugiodendron ferreum</i>	Black ironwood, Leadwood
T	<i>Reynosa septentrionalis</i>	Darlingplum

### Rhizophoraceae

	<i>Rhizophora mangle</i>	Red mangrove
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### Rubiaceae

C	<i>Chiococca alba</i>	Common snowberry, Milkberry
	<i>Chiococca parvifolia</i>	Pineland snowberry
CE	<i>Ernodea littoralis</i>	Beach-creeper, Coughbush
C	<i>Genipa clusiifolia</i>	Sevenyear-apple, Sevenyear apple
	<i>Guettarda elliptica</i>	Everglades velvetseed, Hammock velvetseed
C	<i>Hamelia patens</i>	Firebush
	<i>Morinda royoc</i>	Yellowroot, Redgal, Mouse's pineapple
CE, EN	<i>Psychotria ligustrifolia</i>	Bahama wild coffee
C	<i>Psychotria nervosa</i>	Shiny-leaved wild-coffee
CE	<i>Psychotria punctata</i>	Dotted wild coffee
C	<i>Randia aculeata</i>	White indigoberry

E	<i>Spermacoce assurgens</i> <i>Spermacoce verticillata</i>	Woodland false buttonweed Shrubby false buttonweed
<u>Rutaceae</u>		
C	<i>Amyris elemifera</i>	Common torchwood, Sea torchwood
CE, EN, SF1	<i>Zanthoxylum coriaceum</i>	Biscayne prickly-ash
C	<i>Zanthoxylum fagara</i>	Wild-lime, Lime prickly-ash
C, EN, SF1	<i>Zanthoxylum flavum</i>	West Indian satinwood, Yellowwood
<u>Sapindaceae</u>		
	<i>Exothea paniculata</i>	Inkwood, Butterbough
C	<i>Sapindus saponaria</i>	Soapberry
<u>Sapotaceae</u>		
T	<i>Chrysophyllum oliviforme</i>	Satinleaf
C, T	<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>	Wild dilly
CE, I	<i>Manilkara zapota</i>	Sapodilla
CE	<i>Pouteria campechiana</i>	Canistel, Eggfruit
	<i>Sideroxylon celastrinum</i>	Saffronplum
C	<i>Sideroxylon foetidissimum</i>	Wild mastic, False mastic
C	<i>Sideroxylon salicifolium</i>	Willow-bustic, White bully
<u>Sarraceniaceae</u>		
CE, T	<i>Sarracenia minor</i>	Hooded pitcherplant
<u>Scrophulariaceae</u>		
	<i>Bacopa monnieri</i>	Water hyssop, Herb-of-grace
	<i>Capraria biflora</i>	Goatweed
<u>Simaroubaceae</u>		
CE, EN, SF1	<i>Picramnia pentandra</i>	Florida bitterbush
C	<i>Simarouba glauca</i>	Paradisetree
<u>Solanaceae</u>		
T	<i>Solanum donianum</i>	Mullein nightshade
<u>Sterculiaceae</u>		
	<i>Waltheria indica</i>	Sleepy morning
<u>Surianaceae</u>		
C	<i>Suriana maritima</i>	Baycedar
<u>Theophrastaceae</u>		
CE	<i>Jacquinia arborea</i>	
C, T	<i>Jacquinia keyensis</i>	Joewood
<u>Turneraceae</u>		
E	<i>Turnera ulmifolia</i>	Yellow alder, Ramgoat dashalong
<u>Urticaceae</u>		
CE	<i>Boehmeria cylindrica</i>	Button-hemp, False nettle, Bog hemp
<u>Verbenaceae</u>		
C	<i>Callicarpa americana</i>	American beautyberry
C	<i>Citharexylum spinosum</i>	Florida fiddlewood
CE	<i>Duranta erecta</i>	Golden-dewdrop, Golden dewdrops
CE, I	<i>Lantana camara</i>	Shrubverbena
C	<i>Lantana involucrata</i>	Wild-sage, Buttonsage

	<i>Phyla nodiflora</i>	Frog fruit, Turkey tangle fogfruit, Capeweed
CE	<i>Stachytarpheta frantzii</i>	Pije de gato
C	<i>Stachytarpheta jamaicensis</i>	Blue porterweed, Joee
CE, II	<i>Vitex trifolia</i>	Simpleleaf chastetree
<u>Vitaceae</u>		
CE	<i>Ampelopsis arborea</i>	Peppervine
<u>Zygophyllaceae</u>		
CE	<i>Guajacum officinale</i>	Common lignumvitae
C, EN, SF1	<i>Guajacum sanctum</i>	Lignumvitae, Hollywood lignumvitae
<b><u>Gymnosperms</u></b>		
<u>Cycadaceae</u>		
CE	<i>Cycas circinalis</i>	Sago-palm, Queen sago
<u>Zamiaceae</u>		
C	<i>Zamia integrifolia</i>	Coontie, Florida arrowroot
<b><u>Monocots</u></b>		
<u>Agavaceae</u>		
	<i>Agave decipiens</i>	False-sisal
E, II	<i>Agave sisalana</i>	Sisal-hemp
CE	<i>Furcraea foetida</i>	Mauritius-hemp
E, II	<i>Sansevieria hyacinthoides</i>	Bowstring-hemp, Mother-in-laws tongue
<u>Araceae</u>		
CE, I	<i>Pistia stratiotes</i>	Water-lettuce
<u>Arecaceae</u>		
C, T	<i>Coccothrinax argentata</i>	Florida silver palm
CE	<i>Cocos nucifera</i>	Coconut palm
CE	<i>Latania loddigesii</i>	Blue latan palm
CE, II	<i>Livistona chinensis</i>	Chinese fan palm
CE	<i>Phoenix</i> sp.	Date palm
CE, EN, SF1	<i>Pseudophoenix sargentii</i>	Sargent's palm, Sargent's cherry palm
CE, II	<i>Ptychosperma elegans</i>	Solitaire palm, Alexander palm
C	<i>Sabal palmetto</i>	Cabbage palm
C	<i>Serenoa repens</i>	Saw palmetto
C, EN	<i>Thrinax morrisii</i>	Silver thatch palm, Brittle thatch palm
C, EN	<i>Thrinax radiata</i>	Green thatch palm, Florida thatch palm
E, II	<i>Washingtonia robusta</i>	Desert palm, Washington fan palm
<u>Bromeliaceae</u>		
	<i>Tillandsia paucifolia</i>	Twisted wild-pine, Potbelly airplant
	<i>Tillandsia usneoides</i>	Spanish-moss
<u>Cannaceae</u>		
CE	<i>Canna</i> sp.	Canna-lily
<u>Commelinaceae</u>		
	<i>Commelina erecta</i>	Whitemouth dayflower
E, I	<i>Tradescantia spathacea</i>	Oysterplant, Moses-in-the-cradle, Boatlily
<u>Cyperaceae</u>		
	<i>Cyperus croceus</i>	Baldwin's flatsedge

E, II	<i>Cyperus involucratus</i>	Umbrella plant
	<i>Cyperus ligularis</i>	Swamp flatsedge
E	<i>Fimbristylis cymosa</i>	Hurricane sedge, Hurricanegrass
CE	<i>Scirpus cf. tabernaemontani</i>	Softstem bulrush
<u>Lemnaceae</u>		
	<i>Lemna obscura</i>	Little duckweed
<u>Liliaceae</u>		
E, I	<i>Asparagus densiflorus</i>	Sprenger's asparagus-fern
CE	<i>Liriope muscari</i>	Big blue lilyturf
<u>Musaceae</u>		
CE	<i>Ravenala madagascariensis</i>	Travelers-palm, Travelerstree
<u>Nymphaeaceae</u>		
CE	<i>Nymphaea sp.</i>	Waterlily
<u>Orchidaceae</u>		
E	<i>Oeceoclades maculata</i>	African ground orchid, Monk orchid
<u>Pandanaceae</u>		
CE	<i>Pandanus sp.</i>	Screw-pine
<u>Poaceae</u>		
	<i>Andropogon glomeratus var. pumilus</i>	Common bushy bluestem
CE	<i>Bambusa sp.</i>	Bamboo
	<i>Cenchrus echinatus</i>	Southern sandbur
	<i>Cenchrus incertus</i>	Coastal sandbur
E	<i>Cynodon dactylon</i>	Bermuda grass
E	<i>Dactyloctenium aegyptium</i>	Crow's-foot grass, Durban crowfootgrass
E	<i>Eleusine indica</i>	Indian goose grass
E	<i>Eragrostis amabilis</i>	Feather love grass
E	<i>Eragrostis ciliaris</i>	Gophertail love grass
	<i>Eustachys petraea</i>	Common fingergrass, Pinewoods fingergrass
C	<i>Lasiacis divaricata</i>	Smallcane, Florida tibisee
C	<i>Muhlenbergia capillaris</i>	Muhlygrass, Hairawnmuhly
	<i>Panicum amarum</i>	Beachgrass, Bitter panicgrass
EN	<i>Paspalidium chapmanii</i>	Coral panicum
	<i>Paspalum caespitosum</i>	Blue paspalum, Blue crowngrass
CE	<i>Paspalum conjugatum</i>	Sour paspalum, Hilograss
	<i>Paspalum setaceum</i>	Thin paspalum
	<i>Setaria parviflora</i>	Knotroot foxtail, Yellow bristlegrass
E	<i>Sorghum halepense</i>	Johnson grass
E	<i>Sporobolus indicus var. pyramidalis</i>	West Indian dropseed
E	<i>Stenotaphrum secundatum</i>	St. Augustine grass
CE	<i>Tripsacum dactyloides</i>	Eastern gamagrass, Fakahatchee grass
CE, T	<i>Tripsacum floridanum</i>	Florida gamagrass
E, I	<i>Urochloa mutica</i>	Paragrass
<u>Pontederiaceae</u>		
CE	<i>Pontederia cordata</i>	Pickerelweed
<u>Smilacaceae</u>		
	<i>Smilax auriculata</i>	Earleaf greenbrier
T	<i>Smilax havanensis</i>	Havana greenbrier, Everglades greenbrier

## Pteridophytes

### Nephrolepidaceae

CE, I      *Nephrolepis cordifolia*      Tuberous sword fern

### Polypodiaceae

C      *Campyloneurum phyllitidis*      Long strap fern  
C      *Phlebodium aureum*      Golden polypody

### Psilotaceae

*Psilotum nudum*      Whisk-fern

### Pteridaceae

C      *Acrostichum danaeifolium*      Giant leather fern  
T      *Pteris bahamensis*      Bahama ladder brake  
E, II      *Pteris vittata*      China brake

### Thelypteridaceae

*Thelypteris kunthii*      Southern shield fern

Total number of non native plants = 133  
Total # of non-native naturalized plants = 42  
Total # of cultivated only non-native plants = 89  
Total # of native plants = 149  
Total # of native plants cultivated only = 67

Total # of plants = 280

T = Threatened by the state of Florida

EN = Endangered by the state of Florida

SFX = Extirpated in South Florida (from the wild)

SF1 = Critically Imperiled in South Florida by IRC

E = Not Native to Stock Island. This includes species native to elsewhere in Florida, but not the lower Florida Keys

CE = Not Native to Stock Island, cultivated only. This includes species native to elsewhere in Florida, but not the lower Florida Keys

C = Cultivated, Native to Stock Island

I = Florida EPPC category I Invasive plant

II = Florida EPPC category II potentially invasive plant



## Appendix 2

### Voluntary Codes of Conduct For Botanic Gardens and Arboreta February 2002

1. Conduct an institution-wide review examining all departments and activities that provide opportunities to stem the proliferation of invasive species and inform visitors. For example, review or write a collections policy that addresses this issue; examine such activities as seed sales, plant sales, book store offerings, wreath-making workshops, etc.
2. Avoid introducing invasive plants by establishing an invasive plant assessment procedure. Predictive risk assessments are desirable, and should also include responsible monitoring on the garden site or through partnerships with other institutions. Institutions should be aware of both direct and indirect effects of plant introduction, such as biological interference in gene flow, disruption of pollinator relationships, etc.
3. Consider removing invasive species from plant collections. If a decision is made to retain an invasive plant, ensure its control and provide strong interpretation to the public explaining the risk and its function in the garden.
4. Seek to control harmful invasive species in natural areas managed by the garden and assist others in controlling them on their property, when possible.
5. Promote non-invasive alternative plants or, when possible, help develop non-invasive alternatives through plant selection or breeding.
6. If your institution participates in seed or plant distribution, including through Index Seminum, do not distribute known invasive plants except for bona-fide research purposes, and consider the consequences of distribution outside your biogeographic region. Consider a statement of caution attached to species that appear to be potentially invasive but have not been fully evaluated.
7. Increase public awareness about invasive plants. Inform why they are a problem, including the origin, mechanisms of harm, and need for prevention and control. Work with the local nursery and seed industries to assist the public in environmentally safe gardening and sales. Horticulture education programs, such as those at universities, should also be included in education and outreach efforts. Encourage the public to evaluate what they do in their own practices and gardens.
8. Participate in developing, implementing, or supporting national, regional, or local early warning systems for immediate reporting and control. Participate also in the creation of regional lists of concern.

9. Botanical gardens should try to become informed about invasiveness of their species in other biogeographic regions, and this information should be compiled and shared in a manner accessible to all.
10. Become partners with other organizations in the management of harmful invasive species.
11. Follow all laws on importation, exportation, quarantine, and distribution of plant materials across political boundaries, including foreign countries. Be sensitive to conventions and treaties that deal with this issue, and encourage affiliated organizations (plant societies, garden clubs, etc.) to do the same.

Center for Plant Conservation. 2002. Voluntary Codes of Conduct For Botanic Gardens and Arboreta. <http://www.centerforplantconservation.org/invasives/gardensN.html>. Center for Plant Conservation, St. Louis.