



AGENDA
ENVIRONMENTAL ADVISORY BOARD
CITY OF PORT ORANGE

Meeting Date: Monday, October 22, 2018

Time: 5:15 PM

Type of Meeting: Regular

Location: 2nd Floor Conference Room
City Hall, 1000 City Center Circle

A. CALL TO ORDER

1. Roll Call

B. DISCUSSION/ACTION

2. Consideration of July 23, 2018 Minutes
3. Riverwalk Environmental Issues
4. Proper palm tree pruning
5. Environmental summit
6. List of invasive species

C. PUBLIC COMMENTS

D. BOARD COMMENTS

E. NEXT MEETING DATE

7. Next Meeting Date: January 21, 2019
8. Items for Next Agenda

F. ADJOURNMENT

ANY PERSON WHO DECIDES TO APPEAL ANY DECISION MADE BY THE **ENVIRONMENTAL ADVISORY BOARD** WILL NEED A RECORD OF THE PROCEEDINGS, AND FOR SUCH PURPOSE HE OR SHE MAY NEED TO ENSURE AT HIS OR HER OWN EXPENSE FOR THE TAKING AND PREPARATION OF A VERBATIM RECORD OF ALL TESTIMONY AND EVIDENCE OF THE PROCEEDINGS UPON WHICH THE APPEAL IS TO BE BASED. NOTE: IF YOU ARE A PERSON WITH A DISABILITY WHO NEEDS AN ACCOMMODATION IN ORDER TO PARTICIPATE IN THIS PROCEEDING, YOU ARE ENTITLED, AT NO COST TO YOU, TO THE PROVISION OF CERTAIN ASSISTANCE. PLEASE CONTACT THE CITY CLERK FOR THE CITY OF PORT ORANGE, 1000 CITY CENTER CIRCLE, PORT ORANGE, FLORIDA 32129, TELEPHONE NUMBER 386-506-5563, CITYCLERK@PORT-ORANGE.ORG, AS FAR IN ADVANCE AS POSSIBLE, BUT PREFERABLY WITHIN 2 WORKING DAYS OF YOUR RECEIPT OF THIS NOTICE OR 5 DAYS PRIOR TO THE MEETING DATE. IF YOU ARE HEARING OR VOICE IMPAIRED, CONTACT THE RELAY OPERATOR AT 7-1-1 or 1-800-955-8771. UPON REQUEST BY A QUALIFIED INDIVIDUAL WITH A DISABILITY, THIS DOCUMENT WILL BE MADE AVAILABLE IN AN ALTERNATE FORMAT. IF YOU NEED TO REQUEST THIS DOCUMENT IN AN ALTERNATE FORMAT, PLEASE CONTACT THE CITY CLERK WHOSE CONTACT INFORMATION IS PROVIDED ABOVE.

EAB 7-23-1ENVIRONMENTAL ADVISORY BOARD
MEETING MINUTES
CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE – CITY HALL
2ND FLOOR CONFERENCE ROOM
JULY 23, 2018 AT 5:15 P.M.

A Regular Meeting of the Environmental Advisory Board was called to order by Chairman Macaluso at 5:15 p.m.

Present: John Macaluso, Chairman
Philip Klema
Kristine Cunningham
Newton White
Joseph Fazzie
Nancy Vaughn

Absent: Derek LaMontagne (Excused)

Also Present: Deanna Massey, Administrative Assistant
Margaret Tomlinson, Construction and Engineering Manager

B. DISCUSSION/ACTION

2. Consideration of April 24, 2018 Minutes

Motion to approve the Regular Meeting Minutes from April 24, 2018 was made by Member White, and Seconded by Member Klema Motion carried unanimously by voice vote.

3. Finalization of the Tree Ordinance Resolution

Tim Burman, Community Development Director, stated the City has prepared a chart for the Board to look over and would like to gather some input from the Board.

Margret Tomlinson, Construction and Engineering Manager, stated the tree ordinance that the City uses today was developed in the mid 90's. The City's current code is 1 tree per 2500 square feet of a lot area. The City is looking for greater flexibility for lots 5000 square feet or less. Ms. Tomlinson spoke on the tree survey and buffer requirements for subdivisions. The City would like to maintain a 15% tree preservation in buffers and preservation areas. The City doesn't currently collect mitigation on trees greater than 6" in buffers and recommends all specimen trees to be mitigated. Ms. Tomlinson asked for recommendations or a consensus from the Board as each item is looked at.

The Board Members all agreed with the staff suggestions.

Mr. Burman stated the City will do a little research into increasing tree canopy.

Member Klema commented about construction sites and how the workers and their vehicles can affect the trees.

Jake Johansson, City Manager, stated the City will do some research into construction sites in Port Orange and how many trees may have been affected.

Ms. Tomlinson spoke on the route system of the trees and the drip lines.

Mr. Johansson asked the Board Members what their intent is on the topic of no clear cutting and slash and burn for large tracts of land.

Chairman Macaluso replied that he believes the intention of the Board is to protect the trees.

Member White commented that he thinks the City has done a very good job to make sure the trees are protected and doesn't know how he would improve the current process.

Vice Chair Vaugh questioned if clear cutting and maintaining the buffers is the only way to do things or is there any way to change how the City is doing things.

Mr. Johansson said the City can talk to developers about making some of wooded areas in developments spottier.

The Board Members agreed with the staff suggestions on maintaining the 15% tree preservation in buffers.

Ms. Tomlinson stated the City needs to do further investigation and research as to establishing a new class of tree 'nuisance trees' that was suggested by the Board Members.

Member White would like the City to be able to do something about dead trees on private property.

Vice Chair Vaugh doesn't feel that the City or the tax payers should be responsible for trees on private property.

Member Fazzie stated if the property is part of an HOA the City can differ to the HOA to handle the nuisance tree(s).

Mr. Johansson would like to talk with the police department to see about getting an unsafe tree code violation established.

The board members consented to doing further research into dead or nuisance trees.

Ms. Tomlinson stated the City's current code requires all sites to provide a tree survey. She stated that staff reports related to development will provide an environmental impact summary table to go before Planning Commission and City Council. Staff will provide the EAB an updated account balance at each regularly scheduled meeting. The current balance is \$2,714.

Mr. Johansson would like to meet the Boards requirement to make the tree mitigation bank available online to the public to view at all times.

Ms. Tomlinson spoke on residential feedback to maintain the current code for tree replacement and that some residents prefer palms over hardwoods and palms don't require as much root space. Ms. Tomlinson stated palm trees are credited on a 2:1 basis as shade trees are on a 1:1 basis as understory trees.

Member Cunningham mentioned the Board is trying to encourage the use of more native plants as opposed to exotic plants.

Mr. Johansson stated that the City would like to look at a 1:1 basis on historic trees.

Ms. Tomlinson thinks pruning of palm trees would be a great way for the Board to participate with the public via social media and to create items for the City's website. She stated the staff suggests removing the list of shade trees, understory trees, shrubs and ornamentals from LDC and incorporate it as a resolution that the Board can review annually. Ms. Tomlinson stated the wellfield property is actively managed and protected so we have clean water. All revenue collected goes back into maintaining the wellfield/mitigation bank, which includes the wetland and gopher tortoise bank.

Chairman Macaluso asked staff what the next steps are to move on the finalization of the tree ordinance.

Ms. Tomlinson stated that the City is looking at having a joint workshop with the Board and City Council.

The Board members expressed appreciation to staff for information that was prepared and passed out. They stated it was very organized and easy to read.

C. PUBLIC COMMENTS

There were none.

D. BOARD COMMENTS

Member Cunningham stated once the tree ordinance is completed she would like to direct the Board's attention to flooding issues and invasive species.

Vice Chair Vaughn asked about the Board meeting monthly vs. quarterly.

Chairman Macaluso explained the City is looking at the budget to allow for staffing the monthly meeting for the next fiscal year.

Member Fazzie introduced himself to the Board. He stated this was his first meeting and he is excited to be here.

Chairman Macaluso commented on the cell tower item that will be presented to the Planning Commission. He stated there are anticipated health issues on both sides. Chairman Macaluso stated the Environmental Advisory Board was not involved in any lawsuit on the City.

Member Cunningham asked Ms. Tomlinson if there is anyway the City can apply for any of the Amendment One money to purchase land to make a conservation area.

Ms. Tomlinson will have to look into it.

E. NEXT MEETING DATE

6. Next Meeting Date: October 22nd, 2018

7. Items for Next Agenda

Riverwalk Environmental issues

Proper palm tree pruning

Environmental summit

List of invasive species

F. ADJOURNMENT – 7:24pm

Chairman Macaluso

Proper Palm Care



Properly pruned Washingtonia Palms.

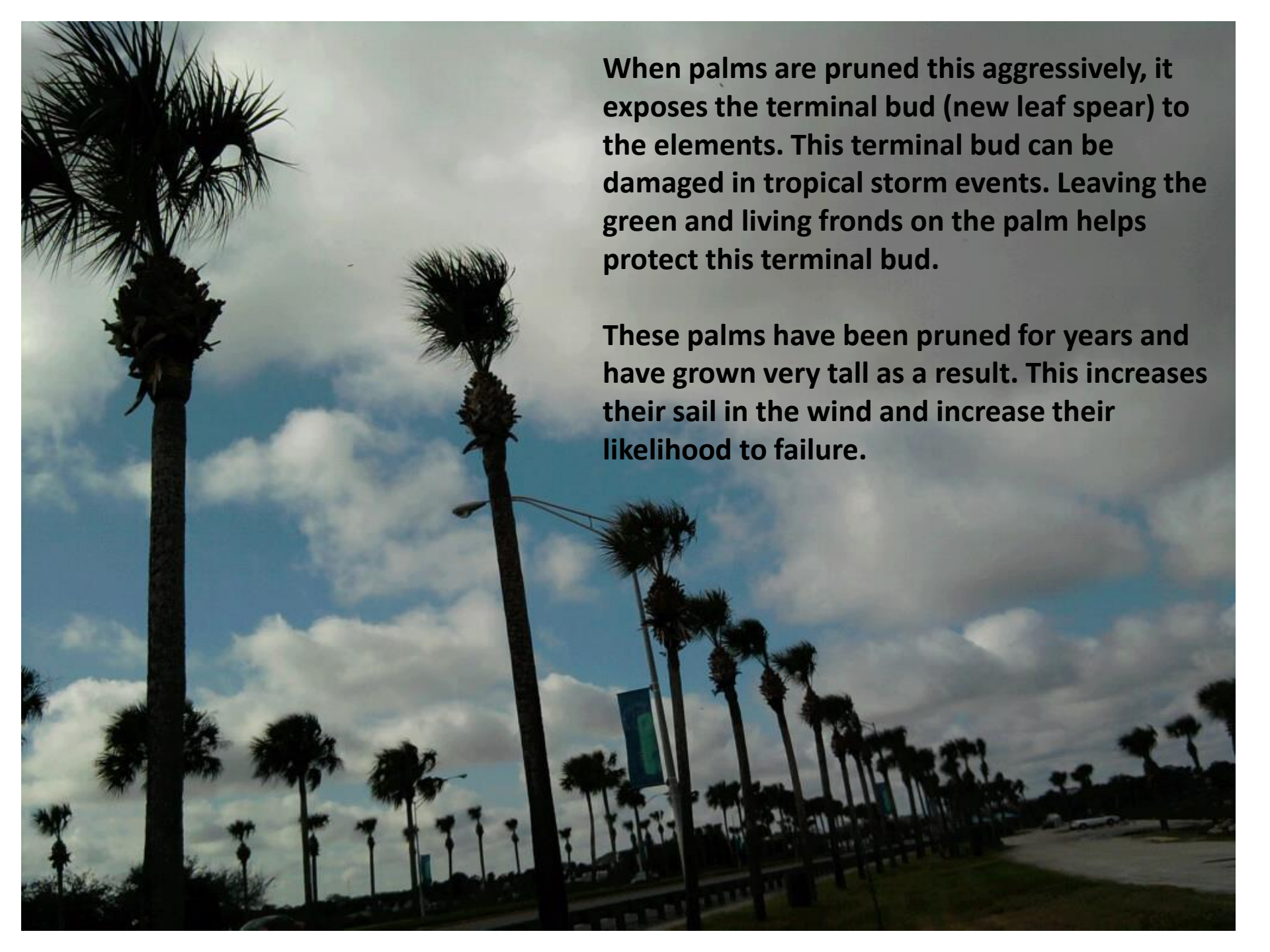
For overall palm health, it is best to not prune palms. In this case, they are maintaining a clean aesthetic look.





Port Orange Causeway – These palms are hurricane cut each year. This is a waste of \$\$ and causes many issues with palm health:

- **Frequent pruning makes them susceptible to disease and nutrient deficiencies. (Palm Weevils)**
- **Harsh pruning makes the grow much taller than they normally would. Increased height=increase wind load during storms =increased likelihood of failure onto the roadway.**

A photograph showing a row of tall palm trees along a road. The trees are very tall and slender, with their fronds concentrated at the top. The sky is blue with scattered white clouds. A street lamp is visible among the trees. The overall scene suggests a tropical or coastal environment.

When palms are pruned this aggressively, it exposes the terminal bud (new leaf spear) to the elements. This terminal bud can be damaged in tropical storm events. Leaving the green and living fronds on the palm helps protect this terminal bud.

These palms have been pruned for years and have grown very tall as a result. This increases their sail in the wind and increase their likelihood to failure.

**Severely over
Pruned Palms.**

**Sabal palms are
self pruning and
should only be
pruned to reduce
safety lighting,
road signage and
building conflicts.**





Years of harsh pruning (hurricane cuts) causes this bottle necking to occur. This is a weak point in the trunk and is likely to failure at this point.





Hurricane cut sabal palm producing several fruiting branches.

This is a 'stress' response in palms. These excessive fruiting branches produce lots of palms berries that can become a 'slip and fall' liability over sidewalks.

If this palm was not pruned, it would have less fruiting branches.

These palms are on Port Orange Causeway, east side by boat ramps. These have not been pruned and look excellent. They are not too tall, no bottle neck trunks and are pillars of concrete. Both of these went through Hurricane Matthew in 2016 and Hurricane Irma in 2017





This sabal palm was installed 6 years ago on UCF campus and has never been pruned.

It went through Hurricane Matthew in 2016 and Hurricane Irma in 2017.



More palms under Port Orange Bridge that are not pruned. These are nice, short, stout palms.

Sabal palms can live to be more than 200 years old if properly maintained.



Landscape and Natural Resources

UNIVERSITY OF CENTRAL FLORIDA

Thank you!

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Pruning Palms¹

Timothy K. Broschat²

Perhaps the most fundamental question to answer when discussing palm pruning is what should a healthy, properly pruned palm look like? Contrary to popular belief, the palm in Figure 1 is not a properly pruned palm. It provides little shade, is unattractive, and will be weaker than a full-canopied palm like the one in Figure 2. A properly fertilized and pruned palm like the one in Figure 2 should have a round canopy with green leaves right down to the bottom. Consumers must be educated that palms are supposed to have round crowns, not feather-duster crowns.



Figure 1. An overpruned sabal palm.



Figure 2. A healthy, properly pruned palm.

Secondly, not all palms require pruning. There is a large group of palms that have crownshafts—a region of smooth, usually green, tightly clasping leaf bases at the top of the gray trunk (Figure 3). Palms with crownshafts should never need pruning if properly fertilized. A healthy old leaf will be completely green one day, completely orange-brown the second day (Figure 4), and completely brown the third day, when it should fall off by itself. This is natural senescence. Half-dead old leaves that remain on the palm for months

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at a time are usually **deficient in potassium (K)** (<http://edis.ifas.ufl.edu/ep269>) (Figure 5) and should be **fertilized** (<http://edis.ifas.ufl.edu/ep261>) to prevent this problem.



Figure 3. *Hyophorbe lagenicaulis* (bottle palm) showing crownshaft, the distinct smooth green region of the stem above the gray wood.



Figure 4. Naturally senescing older leaf of *Veitchia* sp.



Figure 5. Leaf of areca palm (*Dypsis lutescens*) with severe K deficiency.

Old leaves in palms without crownshafts senesce similarly to those with crownshafts, but dead leaves may have to be pulled or cut off manually (Figure 6). They usually drop down and hang against the trunk when they die, whereas K-deficient leaves usually remain in their normal position within the canopy.



Figure 6. Queen palm (*Syagrus romanzoffiana*), a species of palm without a crownshaft.

Effects of pruning on palms

Pruning, or more importantly, excessive pruning, can affect palms in a number of ways. If palms are overpruned, the reduction in canopy size results in reduced photosynthetic capacity. In the short term, some studies have shown that overpruning can result in greater leaf production rates, but the resulting leaves were smaller in size than those on unpruned palms (Endress et al. 2004; Mendoza et al. 1987; Oyama and Mendoza 1990). If this practice is repeated frequently, the palm may also develop a smaller trunk diameter (Figure 7).



Figure 7. Overpruned sabal palms (*Sabal palmetto*) showing tapered trunks.

Pruning old K-deficient leaves can also impact palm health. Potassium, like nitrogen and magnesium, is a mobile element within the palm. Thus, symptoms occur first on the oldest leaves, as these are depleted of their K in order to sustain growth of the new leaves. The oldest leaf (on the left side) in the K-deficient spindle palm (*Hyophorbe verschafeltii*) shown in Figure 8 shows necrosis and frizzling of most leaflets, but the rachis and the basal portion of most leaflets remain alive. The next oldest leaf (on right) shows no necrosis but has extensive orange translucent spotting on its leaflets. The youngest leaf is completely symptom free. If these older discolored leaves are removed, the palm then removes K from the next leaves up within the canopy that are currently green and symptom free. Repeated pruning of K-deficient older leaves has been shown to reduce the number of green, symptom-free leaves within the canopy (Broschat 1994) and, in severely K-deficient palms, is known to accelerate the rate of decline leading to death of the palm.



Figure 8. Severely K-deficient spindle palm (*Hyophorbe verschafeltii*) showing extensive orange translucent spotting, leaflet tip necrosis, and reduced canopy size.

Some diseases, such as [fusarium wilt of Canary Island date palm](http://edis.ifas.ufl.edu/pp139) (*Phoenix canariensis*) (<http://edis.ifas.ufl.edu/pp139>) (Figure 9), are known to be spread by pruning with infested tools (Elliott et al., 2004). Tools used to prune infected palms will be covered with a residue containing fungal material. If this tool is then used to prune living leaves on a healthy palm, the fungus will be transferred in the process. When pruning these palms, tools should be soaked in a disinfectant solution for 5 minutes before using them on another palm. Better yet, cut down the infected palm as soon as the disease is noticed to reduce the chances of spreading it to other palms. This is also a good reason not to prune off living older leaves to achieve the so-called “pineapple” effect on Canary Island date palms. Freshly cut living leaf bases release volatile chemicals that attract [palm](http://edis.ifas.ufl.edu/pp139)

[weevils](http://edis.ifas.ufl.edu/IN139), a serious insect pest of this palm (<http://edis.ifas.ufl.edu/IN139>).

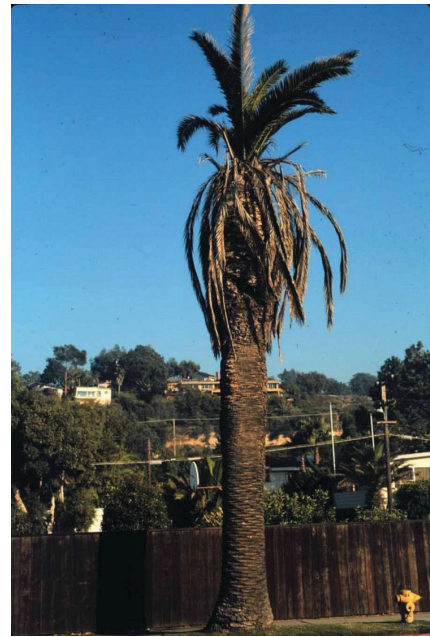


Figure 9. *Fusarium* wilt of Canary Island date palm (*Phoenix canariensis*).

Removal of old palm leaf skirts such as those found on Mexican fan palms (Figure 10) can remove hiding places for rats, snakes, scorpions, and other desirable or not so desirable wildlife. Note that the skirt of dead leaves is beginning to fall off some of the palms in Figure 10. In Florida, Mexican fan palms about 30 feet tall or less typically retain their dead leaves or leaf bases, but within a year or so of reaching this size, all of these old leaves will begin to drop off by themselves (Figure 11). After that, these palms become mostly self-cleaning and should not have to be pruned manually.



Figure 10. Relatively young Mexican fan palms (*Washingtonia robusta*) in Florida still retaining their skirt of old leaves. They are just beginning to fall off.



Figure 11. Leaf bases of Mexican fan palms (*Washingtonia robusta*) beginning to fall off in an irregular pattern.

Although not documented scientifically, there are anecdotal observations that overpruned palms fare more poorly in cold weather events than those with fuller canopies. The additional leaves or leaf bases can provide insulation to the bud or meristem. After cold weather events, it is recommended that cold-damaged leaves not be pruned off until after the [threat of additional cold weather](http://edis.ifas.ufl.edu/mg318) (<http://edis.ifas.ufl.edu/mg318>) has passed.

Traditionally, arborists have been asked to prune palms prior to the arrival of hurricane season. “Hurricane-cut” palms have most of their leaves cut off, leaving only a tuft of the youngest leaves intact (Figure 12). The intent was to reduce wind resistance in the palm, thereby protecting it from wind damage. However, observations of palms after the severe hurricane seasons of 2004 and 2005 in Florida showed that these “hurricane-cut” palms were more likely to have their crowns snapped off than those with fuller crowns (Figures 13 and 14). This may be because the youngest leaves left on these overpruned palms have not hardened off to the extent that older leaves have and lack the support of the older leaf bases (Pfalzgraf 2000). These observations are supported by research on African oil palms (*Elaeis guineensis*) (Calvez 1976; Chan and Duckett 1978). There is no evidence, however, that reduced trunk caliper reduces palm trunk strength.



Figure 12. An overpruned “hurricane-cut” coconut palm (*Cocos nucifera*).



Figure 13. Overpruned coconut palms after hurricane Wilma.
Credits: D. Caldwell, UF/IFAS



Figure 14. Unpruned coconut palms one block away after hurricane Wilma.
Credits: D. Caldwell, UF/IFAS

What should be pruned from palms?

Removal of completely dead leaves and flower and fruit stalks from palms is never a problem (Figure 15). However, half-dead or discolored lower leaves are a symptom of K or other nutrient deficiencies (<http://edis.ifas.ufl.edu/ep273>) (Figure 8). Despite their unattractive appearance, these leaves should be left on the palm as they are providing K in the absence of sufficient K in the soil. It is preferable to treat the K deficiency with effective fertilizers (<http://edis.ifas.ufl.edu/ep261>) to prevent these older leaves from becoming deficient than to cut them off, only to have the symptoms return.

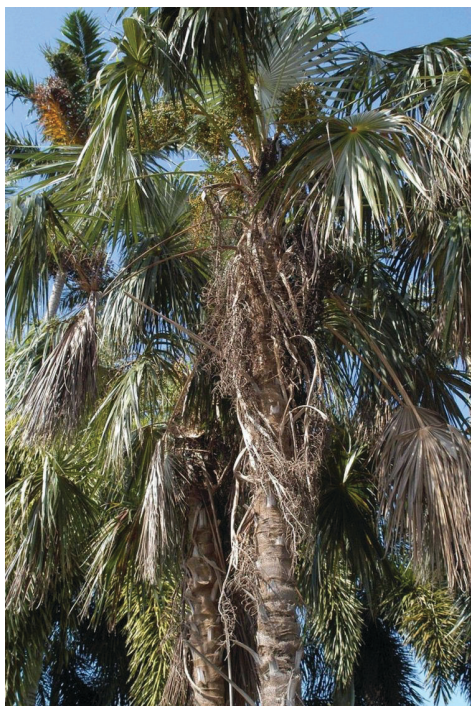


Figure 15. *Coccothrinax* sp. with dead leaves and fruit stalks that should be removed.

If petioles of otherwise healthy leaves have become severely kinked or damaged due to wind (Figure 16) or other mechanical injuries, there is no problem with removing the affected leaves. However, if a few kinked leaves are all that remain on a palm following a severe windstorm, then it may be advisable to retain these damaged leaves as a source of photosynthates for the palm until new leaves can be produced.

There is no evidence that removal of living flower or fruit stalks (Figures 17 and 18) causes any harm to palms. In fact, studies have shown that removal of flower stalks results in increased leaf production rates since carbohydrates that would have been diverted into the production of flowers and fruits are now available for leaf production. Removal

of flower stalks also prevents the production and drop of messy fruit that can eventually sprout into unwanted seedlings. In public areas, coconut palm fruit drop is a major liability concern, and it is much easier to remove small flower stalks than heavy clusters of fruit (Figure 19).



Figure 16. Wind-damaged Bismarck palm (*Bismarckia nobilis*) with kinked petioles on living leaves that could be removed.



Figure 17. Flowers of queen palm (*Syagrus romanzoffiana*).

When should palms be pruned?

Palm pruning is done primarily for aesthetic purposes. From the palm's perspective, there is no one time of the year that is better than another. Pruning dead leaves prior to hurricane season may reduce the chances that these easily detached leaves will become missiles in a storm. Ideally, a dead leaf would be pruned whenever it appears on a palm, but that simply isn't practical unless the palm is located in your own yard and is small enough to be easily accessible with common pruning tools. Commercially, palms are

pruned on a fixed schedule (e.g., yearly, semi-annually, etc.) or whenever the palm's appearance becomes unacceptable to the owner.



Figure 18. Fruit clusters on Carpentaria palm (*Carpentaria acuminata*).

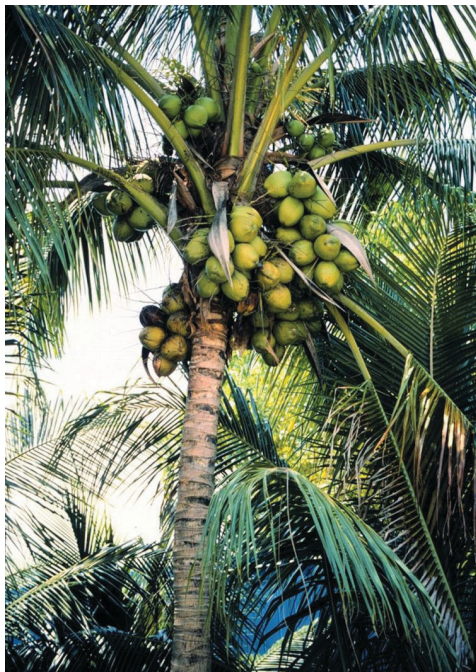


Figure 19. Clusters of coconuts on coconut palm (*Cocos nucifera*) that could create potential liability problems in public areas.

Can living leaves also be removed?

Experienced tree pruners have observed that the time until dead leaves reappear at the bottom of the canopy can be extended if they remove a number of living leaves from the bottom of a palm canopy while they are pruning off dead leaves. This is one of the justifications used for overpruning palms. This concept has merit except that one critical factor is missing in most Florida palms. With the exception of some *Veitchia* spp., solitaire palms (*Ptychosperma elegans*), Christmas palms (*Adonidia merrillii*), and a few other species, virtually all palms in the state of Florida are deficient in K. Potassium deficiency (<http://edis.ifas.ufl.edu/ep269>)

causes premature leaf senescence; therefore, K-deficient palms are unable to support a full canopy of leaves. For example, the average 'Malayan Dwarf' coconut palm (*Cocos nucifera*) in South Florida retains about 13 leaves due to K deficiency (Figure 20). However, if properly fertilized and with no K deficiency, this species retains 26 or more leaves (Figure 21). The average Canary Island date palm retains about 65 leaves in South Florida due to K deficiency, but without K deficiency this species usually retains 130–150 leaves. Thus, most palms in Florida only have half of their normal number of leaves prior to pruning.

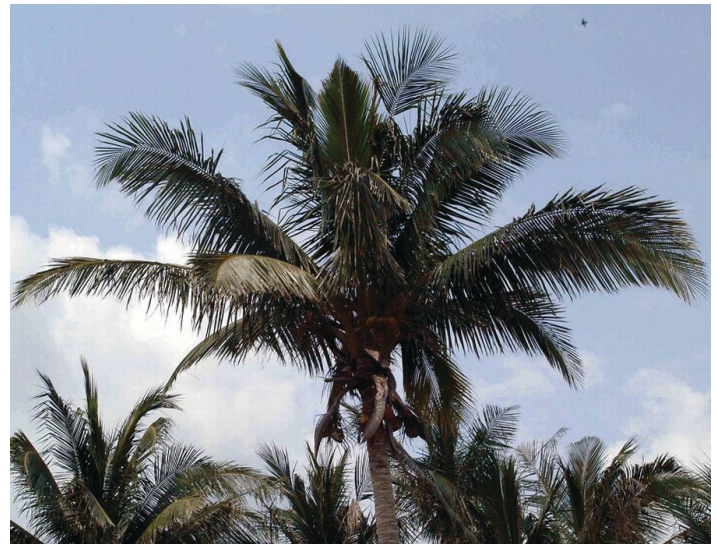


Figure 20. A typical coconut palm (*Cocos nucifera*) in South Florida holding only 13 leaves due to K deficiency.



Figure 21. A properly fertilized coconut palm (*Cocos nucifera*) with a full rounded canopy of 26 leaves.

What is the relationship between K deficiency and pruning living leaves to “buy time” until the palm requires pruning again? If one starts with a K-sufficient palm with a full 360-degree canopy of healthy leaves, then, in theory, one could prune off as many living leaves from the bottom of the canopy as would be produced by the palm during the interval between prunings without ever seeing a single deficient or dead leaf on the palm during that time. In addition, the palm would never appear overpruned. For example, suppose one wishes to prune the leaves of a coconut palm on an annual basis, and this species produces an average of 10 leaves per year. If starting with a healthy, 26-leaved, full-canopied palm (Figure 21) and removing 10 leaves, the result would be a 16-leaf palm that looks similar to the one shown in Figure 22. During the following year, this palm would slowly add new leaves to the canopy until, at 12 months, it would again appear like the one in Figure 21. After about 13 months, the first dead leaf would appear at the bottom of the canopy, but since the palm would be repruned at 12 months, no dead leaves would ever appear on the palm. However, if one starts with a typical K-deficient South Florida coconut palm that only has 13 leaves (Figure 20) and removes a full year’s production of 10 leaves, the result would be an overpruned 3-leaf palm (Figure 12) that, unfortunately, looks very familiar to most Floridians.

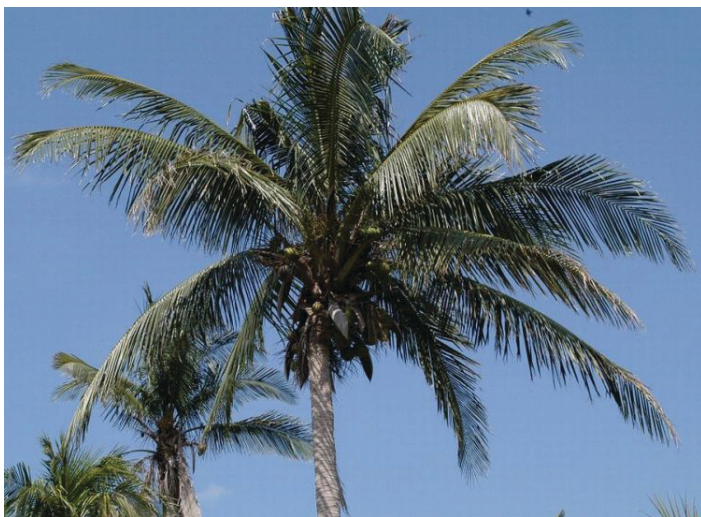


Figure 22. A coconut palm (*Cocos nucifera*) with 16 leaves.

Because pruning K-deficient leaves is known to accelerate the rate of decline from K deficiency (Broschat 1994), and because those K-deficient older leaves are serving as a source of K for the palm in the absence of sufficient K in the soil, only completely dead leaves should be removed from these palms. However, if K deficiencies have been corrected, then one could safely remove as many green leaves from the bottom of the canopy as would be produced during

the interval between prunings without affecting palm nutritional status.

How many leaves do palms produce per year? That number varies widely among species. Estimates of leaf production rates in South Florida for a few species are shown in Table 1. For species not listed, leaf production rates can easily be determined by cutting the tip off the spear leaf of a palm as a marker (or use another permanent system to mark the current spear leaf), waiting 12 months, and then counting the number of leaves above the marked leaf.

While the pruning regime discussed above is ideal for palms, it is unrealistic to expect that everyone will go to the effort and expense of correcting the K deficiency in their palms. It is a slow process that can take 3 years or longer. Thus, ANSI pruning standards for palms (ANSI 2001) state that no leaves with tips above the horizontal plane (9:00 and 3:00 positions on a clock face) should be removed. In Broward County, Florida, doing so is a civil offense and can result in a fine.

How to Remove Leaves

Leaves should be cut close to the trunk, but never cut into the trunk with a machete as this can result in wounds that have been shown to allow *Thielaviopsis trunk rot* (<http://edis.ifas.ufl.edu/pp143>), a lethal disease, to become established. For this reason, one should never pull off leaves that do not pull off easily. By pulling hard enough to eventually free these leaves, a small strip of trunk tissue will also tear off, again resulting in a wound that is readily colonized by *Thielaviopsis paradoxa*, the causal agent of *Thielaviopsis* trunk rot.



Figure 23. Permanent trunk wounds caused by climbing spikes.

Finally, never use climbing spikes for pruning palm leaves, because wounds caused by the spikes will never heal (Figure 23) and can become entry sites for diseases, such as Thielaviopsis trunk rot, or attractants for serious insect pests, such as [palm weevils](http://edis.ifas.ufl.edu/in139) (<http://edis.ifas.ufl.edu/in139>).

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Table 1. Estimates of leaf production rates for select species of palms in South Florida.

Species	Common name	Annual leaf production
<i>Acoelorrhaphe wrightii</i>	Paurotis palm	12
<i>Butia capitata</i>	Pindo palm	8
<i>Cocos nucifera</i>	Coconut palm	10
<i>Latania lontaroides</i>	Red latan palm	8
<i>Phoenix canariensis</i>	Canary Island date palm	50
<i>P. dactylifera</i>	Edible date palm	9
<i>P. reclinata</i>	Senegal date palm	15
<i>P. roebelenii</i>	Pygmy date palm	34
<i>Roystonea regia</i>	Royal palm	12
<i>Sabal palmetto</i>	Sabal palm	14
<i>Washingtonia robusta</i>	Mexican fan palm	60

ABOUT SABAL PALMS, THE STATE TREE OF FLORIDA

DO NOT DO THIS!

Except when transplanting*

GREEN FRONDS are the palm's source of nutrients! Cutting green fronds stunts growth, invites disease, and reduces the palm's natural resilience to high winds. Harsh pruning takes away food and shelter from native and migratory songbirds, woodpeckers, butterflies, honey bees, treefrogs, bats, anoles, squirrels, and other wildlife. Over-pruned palms may develop weakened trunks, which will eventually cause them to break off and die. Work boots with climbing spikes incur wounds in the trunk, leaving the palm prone to disease.

Palm fronds, berries, and boots: Brown fronds provide unique habitat for tree frogs and bats (chemical-free mosquito control). In nature, there is no waste. Recycle fallen palm fronds as mulch or a brush pile for wildlife. Palm berries are critical sources of highly nutritious food for many birds and other wildlife. Plant palms where berries and sprouts won't be a problem. Palm "boots" (the leafbases) are important habitat for other plants, including many beautiful rare and endangered ferns. Perhaps a better understanding of the palm's use by other creatures will enable us to see black fruits, brown fronds, and boots on the trunks as things of great value, if not beauty.



JUST SAY NO

to landscapers who want to prune green fronds, spring flowers and berries. Exclude annual harsh-pruning from your landscape contract.

THIS is a healthy Sabal palm.



THIS is NOT!



THIS TREE

has had its food supply severely restricted. Furthermore, its flowering branches have been removed, eliminating a vital source of nectar for insects + berries for birds.

ONLY WHEN ABSOLUTELY NECESSARY: Prune hanging brown and yellow fronds. Not the boots! Pole pruners work best. Prune stems away from the trunk.

Information sources include: University of Florida Extension Service; *Betrock's Guide to Landscape Palms*, by Alan Meerow; *An Illustrated Guide to Pruning*, by Delmar Publishers; *The Sabal Palm: A Native Monarch*, by Barbara Oehlbeck.

*The "hurricane cut" (fronds only, not the boots) is standard practice when preparing mature palms for transplanting.

**HELP
SPREAD
THE
WORD**

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www.PlantRealFlorida.org ◀◀ Gardeners: Check it out!

www.FloridaNativeNurseries.org ◀◀ For Landscape Pros

www.NativePlantShow.com ◀◀ All the plants, all the professionals, all in one place.

Updated April 2013

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Sustaining the Sabal Palm, Signature of the Florida Skyline

FROM *CABBAGE PALMS, CAN WE CONTINUE TO TRANSPLANT FROM THE WILD?* BY RICHARD MOYROUD, *THE PALMETTO*, FALL 1996.

ONE OF THE MOST INTRIGUING QUESTIONS IN PALM BIOLOGY IS THE RATE OF growth of various species, especially in the wild. Age and growth rates of sabal palm have been studied by the University of Florida, and preliminary results indicate some startling news: under average conditions in the wild, plants require ten to fifteen years or more from seed to the first sign of a trunk at ground level; thereafter, trunks will grow about six inches per year. This means that a sabal palm with 20 feet of trunk is at least 50 years old! We often see trees in landscape jobs that are 30 or 40 feet tall, or 70 to 95 years old. All of these trees are being harvested from the wild on private lands, and the relatively low fee paid to the landowner does not reflect their true value. Will there be trees this old available a decade from now?

THE SABAL PALM is one of our most common and least appreciated native palms. *Sabal palmetto*, our state tree, is a medium-sized fan palm found throughout Florida (except for the interior of the Panhandle). Exceedingly drought tolerant, salt tolerant, cold hardy, pest and disease free, the sabal palm is a foolproof choice for any Florida landscape. It thrives on available rainfall and the meager nutrients found in Florida's sandy soils, making it a perfect choice for sustainable landscapes. This resilient tree endures fire, flood, freeze, and hurricane, and recovers remarkably well after being dug from the wild, carried across the state, and then planted into harsh urban sites. Our demand for sabal palms in landscape plantings is having a noticeable effect on wild populations, and we need to better understand the status and future of this stalwart native.

GROWING SABAL PALMS is a long slow process, requiring patience, persistence, and dedication to the future of Florida. FANN members are propagating sabal palm from seed, and both container-grown and field-grown plants are available and are being used as landscapers discover them. Very small sabal palms with less than three feet of trunk are almost impossible to transplant but are actually quite attractive at this size and usable in the landscape. Sabal palms of this size can be successfully moved from nurseries which have grown the plants in special fiber bags to confine the roots.



ECOSYSTEM IN A TREE: Seminole and Miccosukee Indians refer to the sabal palm as the "tree of life," for it has provided them shelter, food, tools, utensils, and fiber for baskets and netting. Sabal palm often hosts other plants in its "boots," including strangler fig, wild grape, virginia creeper, and a variety of beautiful threatened and endangered ferns. The sabal palm also shelters and supplies nesting material to bats, caracaras, cardinals, crows, doves, flycatchers, gnatcatchers, hawks, hummingbirds, kinglets, mockingbirds, shrikes, wrens, possums, raccoons, squirrels, snakes, tree frogs, lizards, and a variety of insects.



SMALL WHITE FRAGRANT FLOWERS are produced in large clusters and are a good nectar source for bees and butterflies. The black berries which follow are a critical food source for a variety of birds and small mammals.

FOR SUSTAINABLE LANDSCAPES

Preserve existing sabal palms onsite, include them in your landscape design.

When clearing land for development, find a home for every palm. Sabal palms transplant beautifully, so there's no excuse for waste. Never burn or cut down valuable sabal palms.

Never prune green fronds and prune brown fronds only when absolutely necessary.

Plant palms where dropping fruit will not present a problem. If you're really visionary, consider educational signage that will help passersby see the fruit for the treasure it is!

Support sustainable growing practices by purchasing container and field-grown sabal palms.

Cabbage palm? The heart of the palm (the bud of unopened leaves) has traditionally been eaten as "swamp cabbage," hence the folksy names "cabbage palm" or "cabbage tree." Since removal of the bud kills the tree, swamp cabbage is now a rare delicacy best sampled by reading Florida history books.

The first three paragraphs on this page were taken directly from an article written by FANN member Richard Moyroud, owner of Mesozoic Landscapes, for *THE PALMETTO* (Florida Native Plant Society) and the August 1996 *LANDSCAPE & NURSERY DIGEST*, Betrock Information Systems. Remaining information was derived from a variety of sources including *THE SABAL PALM: A NATIVE MONARCH*, by BARBARA OEHLBECK, Gulfshore Press, Naples, 1997.

CATEGORY II (continued)

Scientific Name**	Common Name	Gov. List	Zone
<i>Tridax dactyloides</i>	oyster plant		C, S
<i>Urena lobata</i>	puncture vine, burr-nut		N, C, S
<i>Vitex trifolia</i>	simple-leaf chaste tree		C, S
<i>Washingtonia robusta</i>	Washington fan palm		C, S
<i>Wisteria sinensis</i>	Chinese wisteria		N, C
<i>Xanthosoma sagittifolium</i>	malanga, elephant ear		N, C, S

Recent changes to plant names

Old Name	New Name
<i>Aleurites cordii</i>	<i>Vernicia cordii</i>
<i>Aristolochia littoralis</i>	<i>Aristolochia elegans</i>
<i>Bracharia mutica</i>	<i>Urochloa mutica</i>
<i>Hibiscus tiliaceus</i>	<i>Idalparia tiliaceus</i>
<i>Macfadyenia urguis-cati</i>	<i>Dolichandra urguis-cati</i>
<i>Melaleuca viminalis</i>	<i>Callistemon viminalis</i>
<i>Panicum maximum</i>	<i>Urochloa maxima</i>
<i>Phymatosorus scolopendria</i>	<i>Macrorum grossum</i>
<i>Sapium sebiferum</i>	<i>Triadica sebifera</i>
<i>Wedelia trilobata</i>	<i>Splignediola trilobata</i>

Current nomenclature can be found at
florida.plantatlas.usf.edu

**Plant names are those published in "Guide to Vascular Plants of Florida Third Edition," Richard P. Wunderlin and Bruce F. Hansen, University of Florida Press, 2011. Plant names in parentheses are synonyms or misapplied names that have commonly occurred in the literature and/or indicate a recent name change. Not all synonyms are listed.

FLEPPC List Definitions: Exotic – a species introduced to Florida, purposefully or accidentally, from a natural range outside of Florida. Native – a species whose natural range includes Florida. **Naturalized** – exotic – an exotic that sustains itself outside cultivation (it is still exotic, it has not "become" native). **Invasive** – exotic – an exotic that not only has naturalized, but is expanding on its own in Florida native plant communities.

Abbreviations: Government List (Gov. List): Possession, propagation, sale, and/or transport of these plants is regulated by: F=Florida Department of Agriculture and Consumer Services; U=United States Department of Agriculture

Zone: N = north, C = central, S = south, referring to each species' general distribution in regions of Florida (not its potential range in the state). Please refer to the adjacent map.

Citation example

FLEPPC. 2017. List of Invasive Plant Species Florida Exotic Pest Plant Council. Internet: www.fleppc.org

Daniel F. Austin and Daniel B. Ward

Daniel F. Austin (2015) and Daniel B. Ward (2016) recently passed away. Both Daves were instrumental in maintaining, managing, and providing insight into Florida's many invasive plants. They first volunteered for this effort before it was even formalized as the FLEPPC, participating from that beginning through retirement. Their sage comments and wit are missed.

The 2017 list was prepared by the FLEPPC Plant List Committee

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Florida Exotic Pest Plant Council's 2017 List of Invasive Plant Species

The mission of the Florida Exotic Pest Plant Council is to support the management of invasive exotic plants in Florida's natural areas by providing a forum for the exchange of scientific, educational and technical information.
www.fleppc.org

Note: The FLEPPC List of Invasive Plant Species is not a regulatory list. Only those plants listed as Federal Noxious Weeds, Florida Noxious Weeds, Florida Prohibited Aquatics Plants, or in local ordinances are regulated by law.

Purpose of the List

To provide a list of plants determined by the Florida Exotic Pest Plant Council to be invasive in natural areas of Florida and to routinely update the list based on information of newly identified occurrences and changes in distribution over time. Also, to focus attention on –

- the adverse effects exotic pest plants have on Florida's biodiversity and native plant communities,
- the habitat losses in natural areas from exotic pest plant infestations,
- the impacts on endangered species via habitat loss and alteration,
- the need for pest-plant management,
- the socio-economic impacts of these plants (e.g., increased wildfires or flooding in certain areas),
- changes in the severity of different pest plant infestations over time,
- providing information to help managers set priorities for research and control programs.



www.fleppc.org

For more information on invasive exotic plants, including links to related web pages, visit
www.fleppc.org

invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category 1 species. These species may become ranked Category 1 if ecological damage is demonstrated.

Invasive exotics that have increased in abundance or frequency but have not yet altered Florida Category I species. *These species may become ranked Category I if ecological damage is demonstrated*

[illegible]

continued

Does not include *Ficus microcarpa* subsp. *lyrata*, which is sold as "Green Island Ficus". Many names are applied to this species in Florida because of a complicated taxonomic and nomenclatural history. Plants cultivated in Florida, all representing the same invasive species, have in the past been referred to as *Ruellia brittoniana*, *R. swartziana*, *R. candelata*, and *R. simplex*. Chinese privet is a FLDACS Noxious Weed except for the cultivar 'Varegatum'.
*Added to the FLEPPC List of Invasive Plant Species in 2017
**Plant names are those published in "Guide to Vascular Plants of Florida Third Edition." Richard P. Wunderlin and Bruce F. Hansen, University of Florida Press, 2011. Plant names in parentheses are synonyms or misspelled names that have commonly occurred in the literature or indicate a recent name change. Not all synonyms are listed.