



Good evening! My name is Katherine Booth. Thank you for inviting me to speak about our native trees tonight.

Before I begin, I'd like to complement the Friends of the Sebastian River on your website. I wish I had known about it from the beginning of my conservation journey here in Vero, because the website has links to everything I needed to know. I would have saved myself a lot of time and effort instead of discovering critical information piece by piece on my own. The Friends website will definitely be a resource I'll be sharing with my contacts.

So, I represent a new non-profit conservation organization, Let's Be a Good Neighbor to the Indian River Lagoon. The logo of Be a Good Neighbor shows what we typically think of when we think of the Lagoon--a natural water body full of fish, native aquatic plants, and birds, all cradled in the hand of their designer.

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Everything has a beginning. Regardless of different beliefs about that beginning, we can agree that the ecosystem of the Lagoon is a marvel worth protecting and with cessation of harmful landscaping practices, it can hopefully be restored. As the health of the Lagoon is restored, our health and quality of life will also improve.

Biography:

A little about me: I'm a retired nurse practitioner. My children and grandchildren are Florida natives. Since 2019, I've served on the City of Vero Beach Tree and Beautification Commission. Most recently, I led the effort to revise the City's Landscape and Tree Protection ordinances to prevent pollution of air, drinking water and the Lagoon. Today, I will share with you about my journey to protect native oaks and other native plants, because of their connection to human health and the health of the Lagoon.

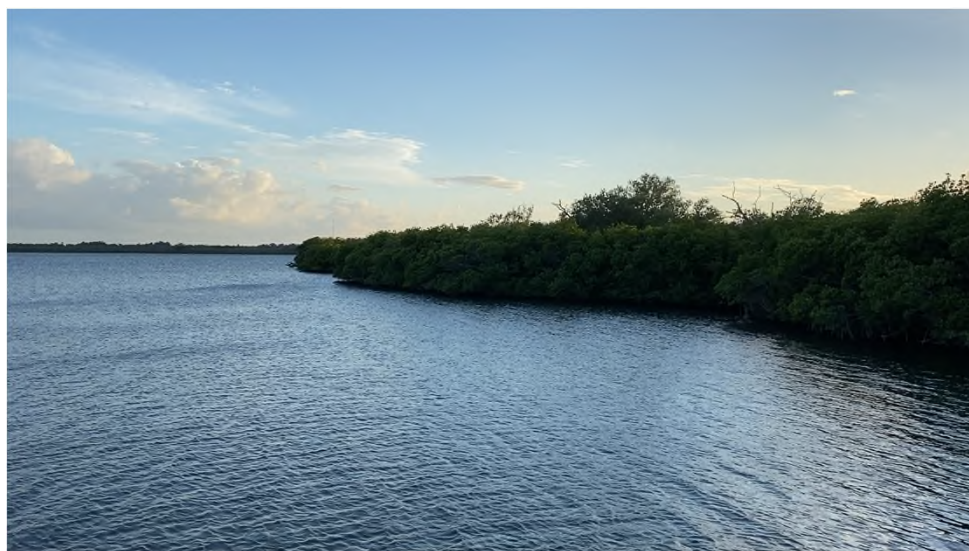


## **NATIVE PLANT LANDSCAPING TO PROTECT THE LAGOON:**

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### **ORGANIC TREE CARE**

Organic care of native trees allows them to perform their critical purpose of helping solve the health crisis of the Lagoon.



The shallow Indian River Lagoon stretches 156 miles or about 40 percent of the East Coast of the State of Florida. The Lagoon contributes nearly \$8 Billion to the Florida economy and is an important attraction for visitors and people wishing to reside here.

I talked with a commercial fisherman in Sebastian. He said he had been fishing in the lagoon for 25 years. In years past he could clearly see to the sandy bottom of the Lagoon and catch his days' quota of fish in 2 hours. This is no longer the case.

Every week in the news we are informed that the Lagoon is in crisis. We know this because of the diseases and deaths of plants and animals that live in it. Seagrass beds have died, manatees have starved because of lack of seagrass, dolphins are dying from respiratory diseases, turtles die from tumors, and there are frequent fish kills. Commercial fishing is also nearly dead and the FDEP warns against eating fish from the Lagoon.

What is causing this crisis and what can you do to reverse it?

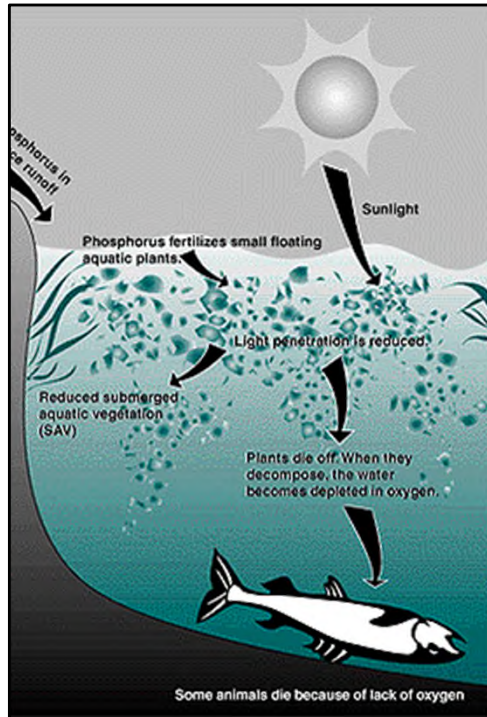
How many of you sometimes buy organic food?

It's almost always more expensive to purchase, right?

So why do you buy it?

What's the ultimate purpose of buying organic food?

Keep your answers in mind as we go through this presentation.



What has happened to the Lagoon?

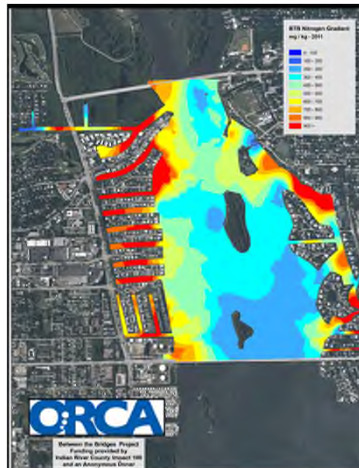
## The Eutrophication Process

- Normally, wind and waves oxygenate the Lagoon
- Algae in water bodies are a normal finding and essential for the smallest creatures to feed on, as the basis of the food web
- Nutrients from landscape fertilizers run off by irrigation and stormwater into the Lagoon
- Abnormal overproduction of algae and non-native invasive aquatic plants occurs
- Overgrowth of both beneficial and harmful plants prevents oxygen and sunlight from penetrating into deeper water (seagrass must have sunlight for photosynthesis)
- Overgrowth is sprayed with toxic aquatic pesticide equivalents of round-up
- Beneficial and non-native invasive aquatic plants are killed and decompose
- Decomposition of the plants requires oxygen, which is taken from the water
- Suffocation of plants and animals occurs from lack of dissolved oxygen
- Muck, composed of toxic synthetic chemicals is now transformed into more poisonous substances, along with dead animal and plant debris, covering the normal sandy floor of the Lagoon, and resulting in dead zones near inhabited coastlines

What has happened to the Lagoon is eutrophication.

Pollution of the Lagoon is caused by chemicals we put on lawn grass and non-native plants. Fertilizers are composed of nitrogen and phosphorus which are nutrients that make plants grow. After these are applied to non-native lawn grass, flowers and shrubs, through the effect of wind, or during rain or irrigation, these synthetic chemicals are carried by air and water runoff into the Lagoon. Plant food nutrients cause the normal algae in water to superbloom. The resulting cover of algae inhibits sunlight and oxygen from penetrating deeper into the Lagoon, killing seagrass and suffocating fish.

## Muck and Unclean Water



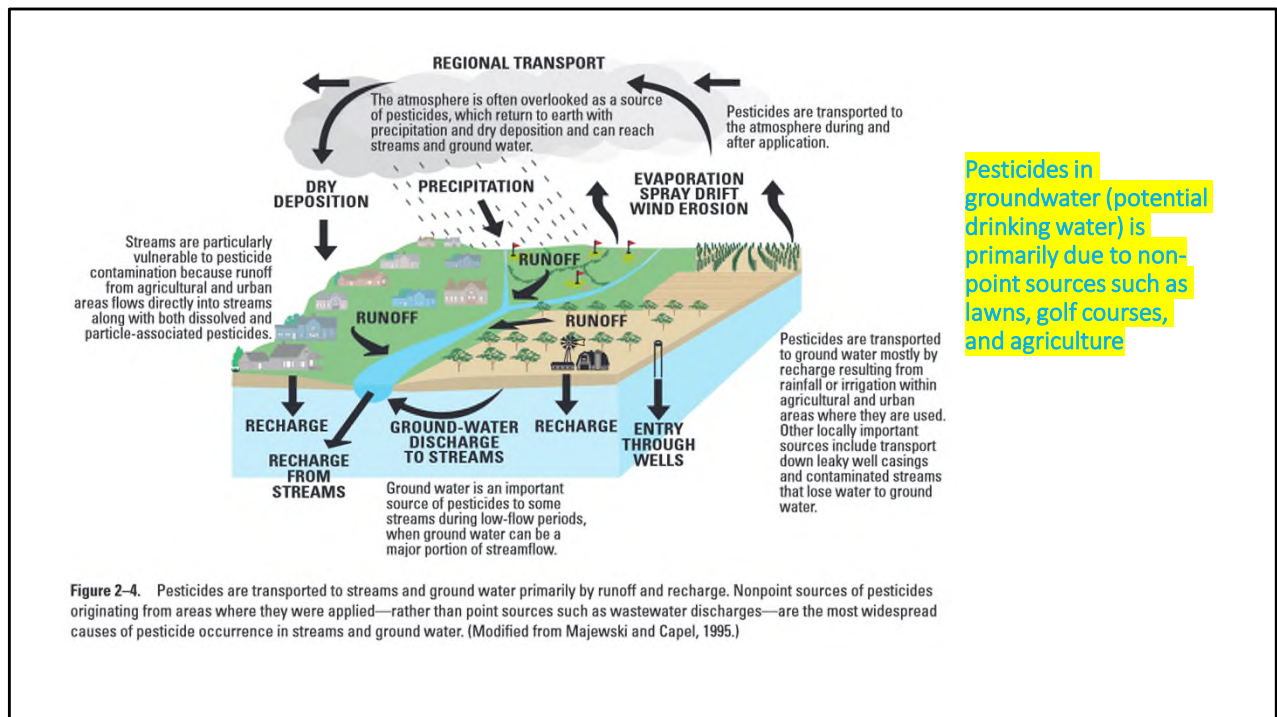
Many times, chemicals are then put into water bodies such as HOA storm water ponds to kill the algae. You may recognize the chemical diquat, which is the aquatic equivalent to glyphosate AKA roundup. As the algae die, they release nitrogen and phosphorus they are made of, back into the water again. Not only that, but as the dead material sinks, it creates a gray, thick, smelly substance called “muck” that covers the normal clean white sand on the bottom of the Lagoon. Dr. Widder of the Ocean Research and Conservation Association (ORCA), who created this pollution map between the Vero bridges, told me that as wind blows over the water, the muck is sheared off and releases these many man-made chemicals and trapped gases that are hazardous for everything living in and around the Lagoon. This same process happens on a smaller scale in HOA stormwater ponds. The polluted water in these man-made ponds drains unfiltered into the Lagoon and/or Ocean.

I participate as a pollution mapping team member with ORCA. This research has revealed where pollution that creates muck, is the worst along the Lagoon in Indian River County.

Getting HOA's to stop polluting has overall not been successful. If you have contacts within HOA's that I can speak to, I have a 10 minute presentation to share with their board or landscape committee.

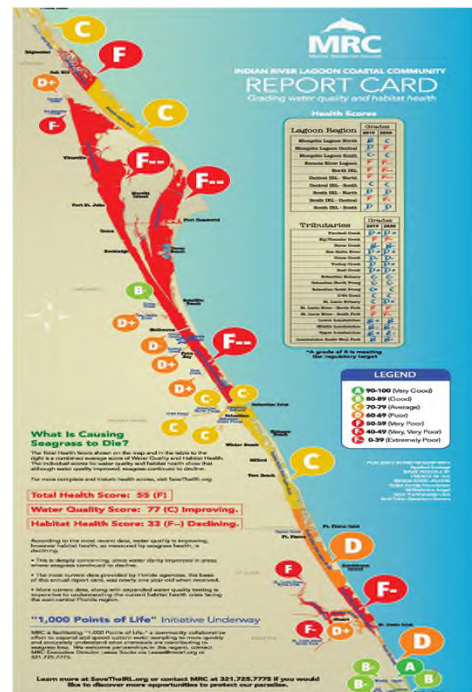
1) ordinances not enforced 2) tax payer funded FFL program





Here I just want to show you that synthetic chemicals applied on our lawns and ornamental non-native plants, not only run off into the Lagoon, but are carried up into the atmosphere and rain back down on us indiscriminately--leaching into ground water, onto food sources and onto our body surfaces and into us. Scary!

Annual Lagoon Report Card 2022



The Marine Resources Council publishes an Annual Lagoon Report Card. Here for 2022, we find that the Sebastian Inlet has a grade of C to C minus, indicating water quality and habitat health is declining.





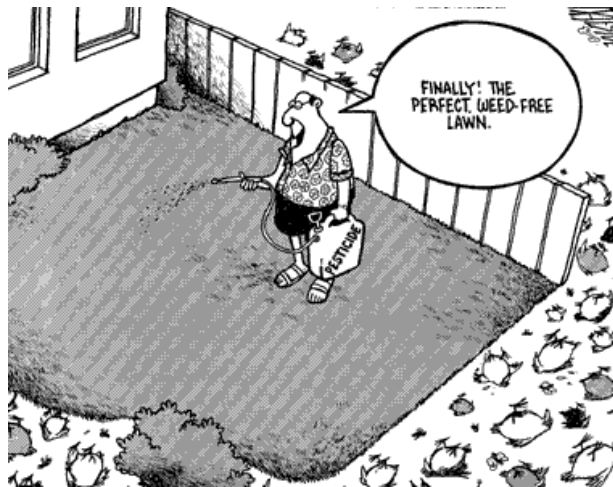
In Vero Beach's Riverside Park there's a mural of beautiful birds commonly found in Florida.

I'm very concerned about the hospitality of Florida and Sebastian for migratory birds.

(at Riverside Park painted by Carol Mahris a member of VB Art Club)

Over 200 chemicals are used for home lawn care, and 66 million pounds of just the products' active ingredients is applied in home and garden settings annually. About two-thirds of the total are herbicides.

## Birds Suffering



Estimates are that at least 67 millions birds die in the U.S. each year due to pesticide toxicity. A report, The State of the World's Birds, compiled every five years, finds that the populations of even once-widespread, easily recognizable species, have rapidly declined by 40% and face global extirpation.

A beautifully manicured and weed-free lawn requiring synthetic chemicals causes birds to suffer from exposure to pesticides, which includes herbicides.

The statistics are ironic—1 bird is killed per 1 pound of lawn chemical!

Herbicides and insecticides kill birds, both directly poisoning them and by altering the natural ecosystems they depend on for survival.

These chemicals harm birds by:

Eliminating host plants for insects and edible seeds which means less food, and eliminating vegetation used for nesting and escape from predators.

Pesticides accumulate in fish and small animals, poisoning water birds and predatory birds which eat them.

Yale Environment 360  
Published at the Yale School of Forestry & Environmental Studies  
April 23, 2018

## Implications from Survey Results

- None want an increase in monthly assessments
- But 50% would approve an increase in the cost of landscape maintenance and 50% would not
- All respondents enjoy bunnies and squirrels on campus yet did not connect wildlife with needing safe and non-toxic habitat for resting, nesting, and plentiful food sources
- All are concerned about their health to such a degree that they buy organic food that has not been grown or processed with pesticides or hormones and is higher priced than the same food that is not organic. Yet in contradiction, respondents unanimously were not concerned about toxins in their air or drinking water or in the IR Lagoon, which all respondents located as being on our eastern border
- All care about children but did not connect clean air and water as essential for children to have a future



- Floridians recently spent \$1,800,000,000 billion to “protect” our environment. \$25,000,000 million was for projects to meet scientific nutrient reduction goals (Total Maximum Daily Loads). This funding supported projects identified by the DEP and the Blue-Green Algae Task Force and its partners to reduce nutrient pollution and harmful algal blooms in our treasured waterways, including the Indian River Lagoon. The State budget additionally included more than \$49,000,000 million for specific projects, including septic conversions, to assist local governments in improving water quality and conservation in their respective communities.

I presented some of this material in a landscape workshop in my COA and in conjunction with that conducted a survey, the results you see here. As residents of Florida, we have voted to approve vast sums of money for conservation or have elected officials who do so. It's sometimes impossible to understand the contradictions people have within themselves. We apparently want the government to fix the pollution problem with 1.8 billion dollars and ignore that we have any personal responsibility.

Many people give to charities that aid children around the world. What they may not realize is that when we pollute water bodies here with toxic lawn chemicals, whether running off into the Lagoon or leaching down through the soil into the aquifer, every drop of water is recycled and used again someplace else. Water molecules in oceans and water molecules in air are contaminated with pollutants that travel all over the world. Children in countries that cannot purify their water for drinking and hygiene, are unavoidably exposed to toxins that cause harmful health effects. **If we love our neighbor as we love ourselves, we will want to amend our behaviors of unnecessary and completely preventable harmful landscaping practices that cause suffering to our neighbor.**

## DO YOU WANT BETTER QUALITY OF LIFE?

- Willingness to question the consensus is how you learn
- Willingness to learn allows you to know what should be changed
- You must be willing to be open to new information
- You must be willing to change your concept of beauty
- Are you willing to decrease time and effort maintaining your landscape?
- Budget constraints may propel you to seek high value, low-cost solutions
- You can transition by changing your landscape gradually as opportunities present

Are you willing to implement what you learn today to personally help protect and restore the Lagoon?

Now I'm asking you, do you want better quality of life for yourself and your neighbor? I hope you will implement what you learn today to personally help protect and restore the Lagoon and Ocean.

## Homeowners: PREVENTABLE Pollution

<b>Lack of Native Plants</b> Little planting of native species of trees, shrubs, and groundcovers that do not need chemicals to survive and thrive	<b>Pruning of Native Trees</b> Poor landscaping practices include excessive pruning of trees and shrubs	<b>Applying Fertilizer, Herbicides and Pesticides</b> on lawns and shrubs and in stormwater ponds	<b>Excessive Irrigation</b> resulting in chemical runoff into the Lagoon	<b>Mis-Management of Storm Water Retention Ponds and Waterfront</b>
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Homeowners and municipalities have control over 5 landscaping sources of preventable and reversible pollution. First, we must define what we mean by native plants.

## Embrace Florida Native Plants



Native plants are defined as plants here when Europeans first arrived. Because these plants thrived before human intervention, they don't require fertilizers or pesticides or herbicides to survive. They do not need these chemicals to grow, and once established they do not need irrigation. This helps keep water in the Lagoon clear by avoiding irrigation water flowing off our yards taking pollutants with it into the Lagoon.

*We must change our perception of beauty and accept the plants that are designed to live here, embracing the natural beauty of Florida's native plants.* When we do that, we will restore the health of the Lagoon, and improve our own health.

You may not realize the variety of native plants available to you because it's rare to see a yard planted with native plants. I have not seen any association entrance have a native plant landscape. When you embrace native plants instead of showy non-natives, which are mostly from Asia, you can expect birds and butterflies to beautify your yard.



## Quercus virginiana—Live Oak

- Size: 40-80 ft tall by 40-100 ft wide
- Life Span: Long-lived perennial. Life span 300+ years.
- Phenology: Evergreen. Inconspicuous blooms in spring; wind pollinated. Acorns ripening the same year in fall.
- Noted for: Interesting foliage, Hurricane wind resistance

Distribution and Planting Zones  
Natural Range in Florida



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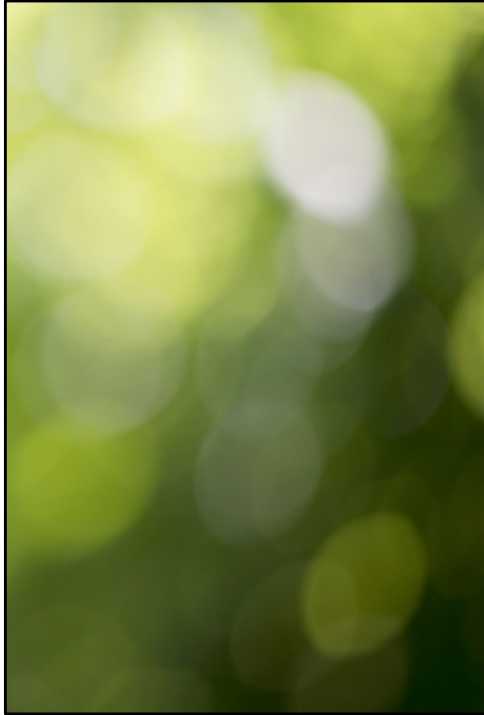
From the Florida Native Plant Society website, we find that live oaks are native to all of Florida

Beautiful Native Oak



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NOTHING TO SAY



Section 7 of Article II, General Provisions, of the **Constitution of the State of Florida**, provides a clear statement that the actions of the legislature and state agents of Florida are to be defined and guided by policies that serve to “conserve and protect” the Florida environment.

**SECTION 7. Natural resources and scenic beauty.—**

(a) It shall be the policy of the state to conserve and protect its natural resources and scenic beauty. Adequate provision shall be made by law for the abatement of air and water pollution and of excessive and unnecessary noise and for the conservation and protection of natural resources.

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Here we see that the Constitution of Florida states, “It shall be the policy...” **see (a)**

## Florida Statute Encourages Florida Friendly Landscaping

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### Lagoon friendly landscapes...

- Conserve water
- Protect the environment
- Are designed for local conditions

Deed restrictions and covenants cannot prohibit

Local governments may not prohibit

FL.S. 373.185

But you still may have to fight a legal battle to enforce it!



State statute 373.185 protects Florida Friendly landscaping. Florida friendly plants are any plant, native and non-native that can tolerate “drought”. We don’t have droughts in Florida. We have seasonal dry periods. *Keep Brevard Beautiful* has a Lagoon Friendly Landscaping program that narrows the variety of Florida friendly plants to native plants only. Lagoon Friendly Landscaping means quality landscapes that protect the fragile Lagoon from synthetic chemicals by the use of native plants, which tolerate seasonal dry periods without irrigation, thereby conserving our limited supply of drinking water.



## Consider --

THIS (Florida Friendly)

Recommended height of turf is 4-6".

Less mowing

= less \$

= less fossil fuel used

= less carbon footprint

### OR BETTER

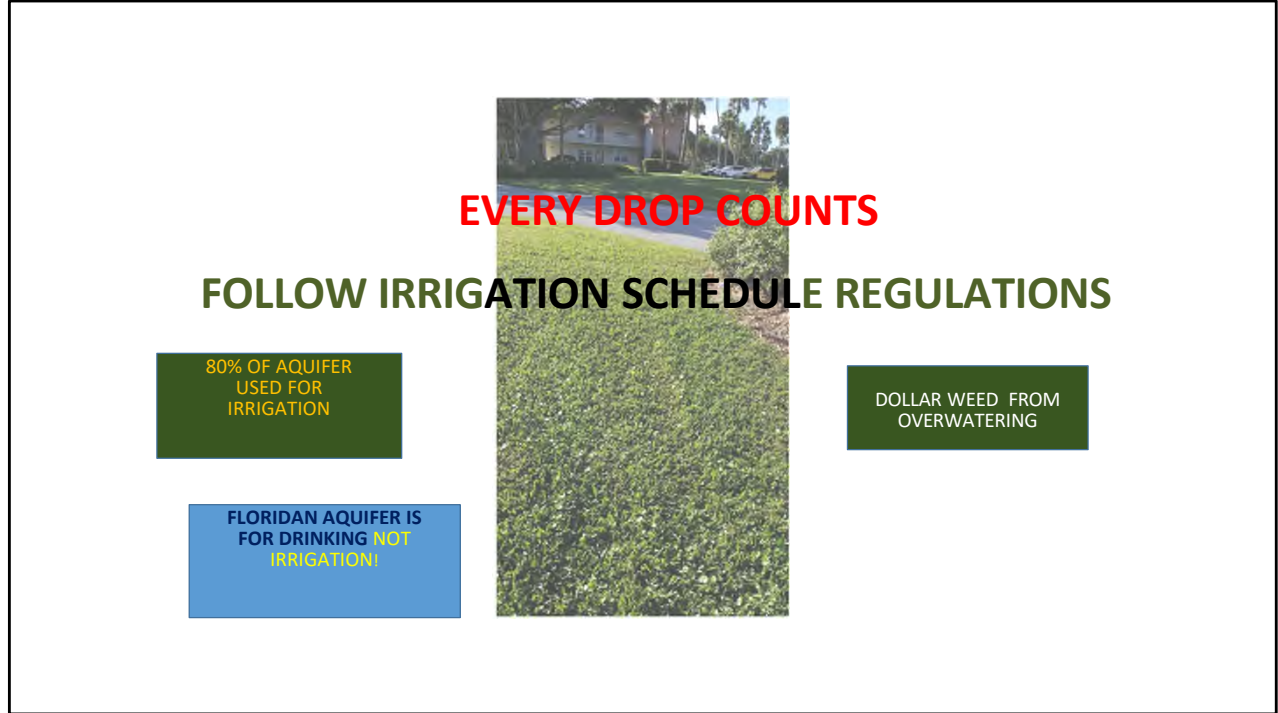
PERFORM A TRIAL of replacing turf area bounded by man made structures with a native ground cover

### OR BEST (Lagoon Friendly)

GRADUALLY replace turf grass with native groundcovers to decrease water usage and cost of manpower and fuel, thereby decreasing pollution and carbon release.

Did you know that the word "lawn" originated 100's of years ago in England? Having grass lawns was a sign of status by wealthy British landowners who had servants to maintain them. We broke away from Britain long ago. It's time for freedom lawns!

There is no turf grass lawn native to Florida. Because all turf grass is non-native, it requires synthetic chemicals to survive. These chemicals runoff into the Lagoon in irrigation water. So, it follows that it's Lagoon Friendly to replace turf grass lawns with native groundcovers, larger beds of native shrubs and flowering plants, and more native trees!



All 5 water districts of Florida regulate water draw-down from ground water and aquifers. All of this water is potential drinking water. Unfortunately, 80% of draw-down is used to irrigate turf grass lawns.

I had a speaker from the county drinking water department come to the Conservation Club I started in Vista Gardens, and he said when the part time residents are here in the cooler dry months, there are times that some of the wells used to test and verify the quality of our drinking water, are dry. Our drawdown of drinking water from the superficial aquifer will be more than ever as Sebastian rapidly undergoes further development and an exploding population.





Irrigation of non-native plants runs off into gutters and drains to the Lagoon, taking with it fertilizers, herbicides, pesticides, fuel residues, heavy metals, street debris such as rubber from tires and other toxic synthetic chemicals.

ALL water runs to the Lagoon.

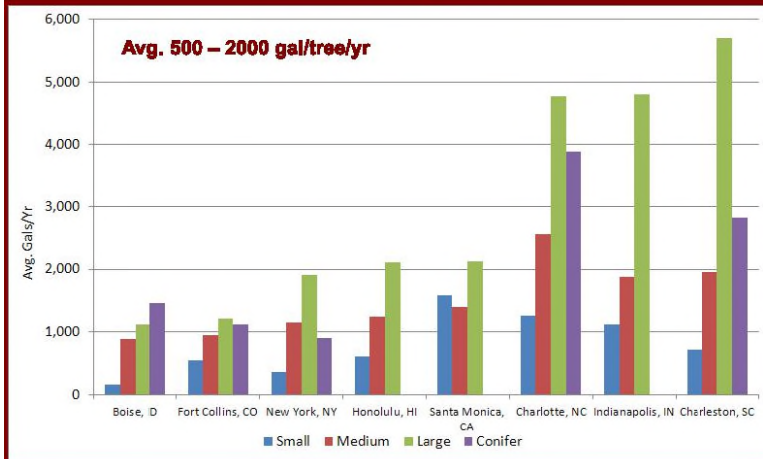
## NATIVE PLANTS

- Are low maintenance
- Don't require chemicals to thrive
- Don't require irrigation after establishment
- Encourage pollinators & beneficial insects
- Save homeowners time and money
- Beautiful and a natural fit into our ecosystem



In a cost comparison study in Florida, between two 60' x 180' plots, one non-native landscape with St. Augustine grass lawn and the other a native plant landscape, costs of maintenance per year were \$1,680 for the lawn vs only \$300 for the native landscape, a greater than 60% cost savings.

## Interception



1 inch of rainfall per acre is equal to 27,000 gallons of stormwater

Range of Live Oak



- Native plants are vital to water conservation and the *quality* of *that* water. In a study of cities across the US, South Carolina had the most large trees for interception of rain water.
- What tree does Charleston have that the other cities do not? The most common hardwood tree in coastal South Carolina are live oaks. This chart indicated that large oaks, meaning mature oak trees, have the most interception of stormwater of any city surveyed. What does this mean to our Lagoon?
- Florida's most abundant native tree is also oak. All parts of the oak intercept rainfall, interrupting its flow, so that it is not shed off the tree flowing unimpeded as stormwater runoff into the Lagoon. Have you noticed that when it rains, it can be dry under a large leafy tree canopy? In this study, one mature oak absorbs 2,000 gallons of rainfall annually.
- 1 inch of rainfall per acre is equal to 27,000 gallons of stormwater. Both Indian River County and the city of Sebastian require 1 inch of rainfall to be kept onsite of a property. A couple of leafy mature oaks will significantly help with that goal, as nothing else can. As the tree directs rainfall downward and into the soil, instead of it running off, more rain infiltrates the ground to help recharge our drinking water aquifer. ~~A plant landscape infiltrates 50% of rainfall into the ground and aquifers and only 10% runoff, whereas a hardscape has 50% runoff and only 15% infiltration.~~

## CYPRESS MULCH

Indian River County, FL Code of Ordinances  
CHAPTER 926. –  
LANDSCAPE AND BUFFER REGULATIONS  
Section 926.06. - Landscape materials standards

*Mulch and ground covers.* The use of cypress mulch is prohibited. Mulch that is not cypress may be used.



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- Another important native tree to water quality of our aquifer are bald and pond cypress trees.
- Cypress tree forests are a disappearing precious resource, needed in wetlands to be natural filters that clean our waterways and serve as catch-basins during storms. Cypress trees are much more valuable to us than shredding them for mulch.
- Science doesn't support the myths of a generation ago—that cypress mulch is superior to other types of mulch in insect resistance, that it doesn't float away in a storm, or is more weed resistant than other mulch materials.
- The best mulches protect the roots of your plants and accomplish these things sustainably. They keep soil cool, slow rainwater, and hold moisture at the roots of plants, prevent soil erosion, keep sunlight from germinating other plants you don't want in your garden, and, ultimately, decompose into the soil and improve it.
- The perfect mulch if you have native oaks, is to use the fallen leaves as free, organic mulch. Turf grass doesn't naturally grow under a shady oak anyway, and fallen oak leaves make a nice color contrast to the rest of the yard. If you have conifers in your yard, fallen pine needles are another perfect mulch material. Using oak leaves and pine needles reduces landfill waste. If you must buy mulch, pine bark nuggets and pine needles/pine straw are sustainable products from pine forests harvested for timber. Avoid dyed wood chips because it is uncertain if the various dyes are harmful to humans, pets, wildlife, soil, plants or ground water. Indian River County code prohibits cypress mulch, but unfortunately, the City of Sebastian does not. When you see cypress mulch being sold at your landscape supply store, please enlighten the manager about how critical cypress forests are to stormwater management and request sustainable alternatives.

## Florida Native Plant Society

The Mission of the Florida Native Plant Society is to promote the preservation, conservation, and restoration of the native plants and native plant communities of Florida.



[www.fnps.org](http://www.fnps.org)

How do you know which plants are natives of your local ecosystem? The Florida Native Plant Society has an online plant finder by your zip code. The local FNPS chapter hosts yard tours at homeowner properties with regular suburban and barrier island homes represented. I hope my own little butterfly garden at my COA will one day be on a landscape tour. These are the best way to become familiar with native plants and the *many* possibilities for landscaping.



Another resource is the Florida Association of Native Nurseries that lists native plant nurseries in your area. There you can see native plants and obtain information about them. Native Butterfly Gardens nursery, Pelican Island Audubon and the ELC all educate about and sell native plants.



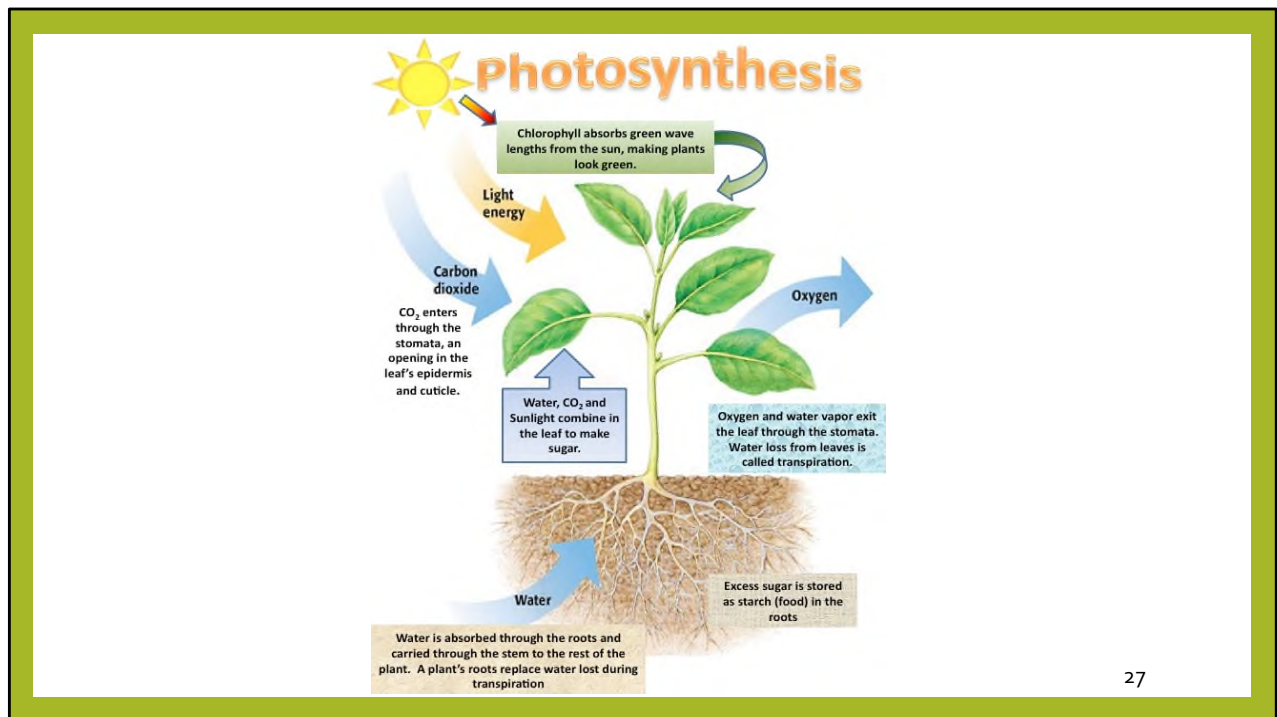


This is the master list of invasive non-native plants, which used to be updated every 2 years. I expect it has purposefully been taken off line with no updates as was relied on in the past.

Did you know because of the non-native plant market, on average 1 new pest is introduced into the US per month and most come through the ports of Florida? This could be a bacteria, virus, insect or pest plant. Plants from other places are hosts for species not normally found here, but normally found on that non-native plant. These pests have no natural predators here as they would in the places in which they were designed to grow.

We don't need non-native plants, but we do need food. Pests that come into the Florida on non-native plants don't just stay here. If conditions are right, they will spread to other areas of the country and there is no way to predict the harm they might do to food crops.

Non-native plants always have the potential to become invasive, bullying native plants out of space. The state of Florida spends millions of tax dollars annually to try to eradicate non-native plants that have become invasive. Legislatively only 12 invasive plants can no longer be sold. But the invasive plant list of Florida names *over 150 plants* still being sold in Florida. By planting natives, you will never cause a problem for the ecosystem where you live. When you see an invasive plant for purchase, please request that the business stop selling it.



What is it about native plants that is so important to the health of the Lagoon?

For an explanation, let's start by going back to biology class.

All life depends on photosynthesis.

The *process* of photosynthesis explains why the leaves of plants are essential, not only for animal and human life, but also for the plant itself.

**EXPLAIN slide.** Photosynthesis is a *miraculous* process. Chlorophyll in leaves take in carbon dioxide, which combined with water taken up from the soil and under the influence of sunlight, is transformed into sugars. Some of the sugars are used by the plant as an energy source to stay alive, and to reproduce by fruit and seeds. The byproducts of photosynthesis are oxygen and water vapor released into the atmosphere.

So the process of photosynthesis in plant leaves, charges the air we breathe with oxygen, keeps rain and air clean by absorbing pollutants, and cools the air around us by water extruded by leaves into the atmosphere.

Trees, which are the plants with the most abundant leaves, have the greatest number of surfaces of any single plant to conduct photosynthesis. Obviously, mature trees photosynthesize more than young trees because of their larger size and more leaves.

## What a Plant Knows

by Daniel Chamovitz



Plants  
have  
photo-  
receptors  
like in our  
eyes

- Knows if you come near
- Knows when you stand over them
- Knows if you're wearing blue or red
- Knows if you've painted your house
- Knows if you've moved their pots from one side of a room to the other

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This photo is of some of my family at McKee Botanical Gardens. Because my children and grandchildren are native Floridians, I'm fully invested in ensuring clean air and clean water for the future of Florida.

Let's explore other amazing properties of plants from Daniel Chamovitz's book, What a Plant Knows.

## Plants continuously monitor their visible environment

- Almost all plants bend toward light
- Plants measure how much light they take in to help them know when it's day or night
- Plants measure not the length of the day but the length of the continuous period of darkness
- Plants can differentiate between colors of light: **blue** light is used to know which direction to bend and **red** to measure the length of the night to know when to bloom



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Light and its colors are what plants see and these have significant meanings to them.

## Plants' Awareness



- Plants differentiate between red, blue, far-red and UV light and respond accordingly
- Plants respond to minute quantities of aromatic compounds wafting in the air
- Plants know when they are being touched and can distinguish different touches
- **Plants' DNA causes them to grow according to the species shape. Thus, plants know where their branches are oriented in space and position successive branches to achieve that design**
- Plants are aware of gravity and align their shape to ensure that shoots grow up and roots grown down
- Plants are aware of their past: they remember past infections and the conditions they've weathered and then modify their current physiology based on these memories and share their knowledge with other plants!

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Plants have anoetic [an o eh tic] consciousness which refers to the ability of organisms to sense, and to react, to external and internal stimuli. But to our current knowledge, plants do not have the capacity for emotional experiences, and cannot feel happy nor do they suffer.

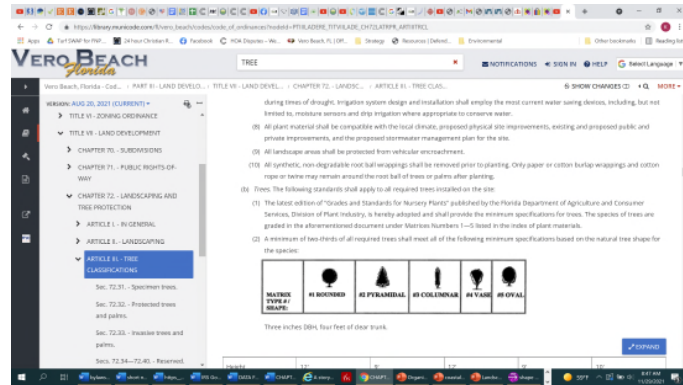
Just like our DNA determines everything *about us*, the same with plants.

Because all plants, including trees, have a particular shape according to their DNA, they know at the cellular level where their branches are supposed to be oriented in space and position successive branches to achieve proper posture according to their designed shape. Pruning interferes with the tree's balance as well as its structural integrity.

# SHAPE SENSING

Proprioception is the perception of the self

Synergies exist between shape sensing and response to external cues, such as wind and gravity



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The City of Vero Beach ordinance refers to this table, showing species have specific shapes. Native oaks' natural shape is round. Because plants know their intended shape, they have a perception of self.



**Note small branches and abundant foliage of  
an organic canopy**

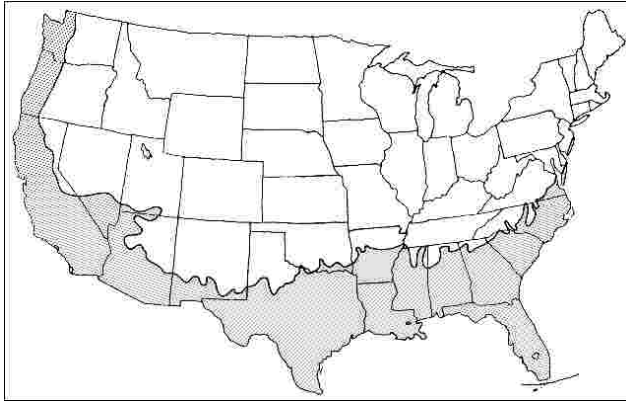


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This SLIDE AND THE NEXT reveals the natural shape and structure of a mature oak.



An oak's  
natural and  
beautifully  
shaped  
skeleton  
exposed by  
wind and salt  
scald from  
Hurricane  
Irma



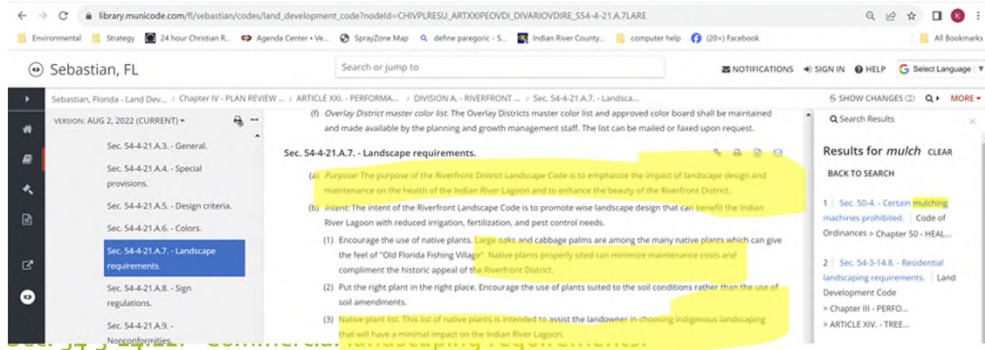
LIVE OAKS ARE FOUND IN HURRICANE PRONE COASTAL REGIONS. WE MUST ASK, WHY ARE THEY FOUND THERE? THEY ARE IDEALLY SUITED TO WITHSTANDING HIGH WINDS BECAUSE THEIR NATURAL SHAPE WITH LOW SPREADING BRANCHES AND ABUNDANT FOLIAGE KEEPS THEIR CENTER OF GRAVITY CLOSE TO THE GROUND, PREVENTING THEM FROM BEING UPROOTED. SMALL INTERIOR BRANCHES AND LEAVES CUSHION LARGE LIMBS SWAYING IN HIGH WIND.

UF/IFAS: Range of Live Oak

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Live Oaks are only found in hurricane prone coastal regions. We must ask, why are they found *there*? They are ideally suited to withstanding high winds because their natural shape, low spreading branches and abundant foliage keeps their center of gravity close to the ground, preventing them from being uprooted. After several hurricanes, including category 5 Hurricane Andrew in 1992, a survey of trees revealed that southern lives oaks *and* laurel oaks had a greater than 95% chance of surviving intact.

# Sebastian Landscaping Codes



(a) General requirements for landscaped areas. Landscaped areas shall include a combination of the following types of materials: trees, shrubs, annuals and/or perennial plants, vines, and/or ground cover. No more than 50% grass shall be used in the landscape area. The use of existing native vegetation including ground cover, shrubs, and trees, is strongly encouraged.

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The City of Sebastian's ordinance states that the "impact of landscape design and maintenance benefits the health of the Lagoon by reducing irrigation, fertilizer and the need for pest control". Therefore our existing, indigenous MATURE OAK TREES deserve our protection.



## The Value of Trees to People

### Water Quality

Healthy trees in our communities improve our environment. In addition to the visual impact of trees, tree **canopies** and root systems provide a natural filter for our drinking water supply and reduce storm water runoff, flooding, and erosion.

### Air Quality

Trees are natural air filters, too. Their **foliage** reduces particulate matter from the air, including dust, micro sized metals, and pollutants such as ozone, nitrogen oxides, ammonia and sulfur dioxides. Trees take in carbon dioxide and produce oxygen. Combined with the cooling effect of trees, these processes can have a significant impact on reducing smog and overall air pollution. Every 40 trees removes 80 lbs. of air pollutants annually.

### Energy

Trees cool the air naturally from the effects of water evaporating from **leaves** and from direct shade. Moisture combined with shade results in cooler air. Homes shaded by trees need less energy for cooling, which in turn means lower monthly utility bills in the summer and a reduced need for utilities to increase power generation to meet peak load demand. Four trees planted around each home could save up to 30% on summer cooling costs.

### Real Estate

**Shaded** neighborhoods and well-landscaped yards have a positive economic influence on real estate values, timeliness of house sales and neighborhood desirability. Studies report that landscaping speeds the sale of a home by four to six weeks.

### Business

Trees are good for business. Research shows that consumers respond positively to shopping environments with healthy urban forests.

Florida Urban Forestry Council

When the Conservation Club at my COA ranked the natural resources in Vista Gardens, we determined that trees were our most valuable land-based resource for the benefits you see on this slide.

Think about this: What part of the tree gives us oxygen? What part of the tree takes in carbon dioxide that we breathe out? What part of the tree captures toxic chemicals from the air? What part of the tree slows and intercepts the most rainfall? What part of the tree provides shade to cool the air around us, our homes and our cars? What part of the tree muffles noise from roads and neighbors? What part of the tree provides privacy between neighbors?

## How Do Native Trees Help the Lagoon? **LEAVES**

According to the Florida Urban Forestry Council

- Improved water quality – natural filtering
- Better air quality – 40 trees can remove 80 lbs of pollutants annually
- Lower energy costs – Leafy shade trees cool the air naturally
- Higher real estate values
- Consumers are drawn to businesses with shade trees

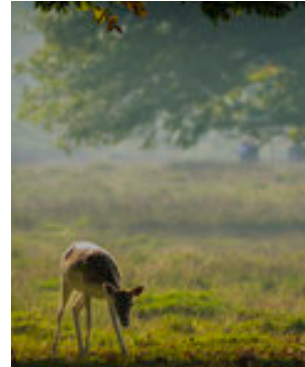


Almost all benefits of native trees are at the LEAF level. Pruning in which only a few branches remain, results in few leaves and essentially no benefits to us! Understand that the term trimming **does not** apply to a tree. Trimming is clipping our fingernails which grow back. Pruning removes branches and leaves forever and interferes with the structural integrity of the tree.



## VALUE OF OAKS TO WILDLIFE

- Birds and mammals eat acorns
- Invertebrates eat leaves
- Leafy foliage used for nests
- Dense foliage provides concealment
- Cavities provide dens, roosts, and nests
- Spanish moss for roosts and nests



Live oaks are considered to host the most biodiverse plants and wildlife in North America. More than 100 species of vertebrate animals are known to consume acorns, including mammals such as deer, squirrels, and rabbits; and birds such as ducks and jays. Oak leaves are even food for butterflies.

Spanish moss is a native bromeliad plant. It is an epiphyte, meaning it gets its nutrients from the air and rainwater. EPIPHYTES ARE NOT PARASITES to trees!

Therefore, they do not need to be removed.

Epiphytes are an important part of the ecosystem and afford many ecological benefits, providing food, water and shelter to Florida animals.

1. This document is WEC248, one of a series of the Department of Wildlife Ecology and Conservation, UF/IFAS Extension. Original publication date August 2008. Revised April 2014. Reviewed June 2017. Visit the EDIS website at <http://edis.ifas.ufl.edu>.

2. Holly K. Ober, associate professor and Extension specialist, Department of Wildlife Ecology and Conservation, UF/IFAS North Florida Research and Education Center, Quincy, FL 32351

## Real Life Comparison

McKee Botanical Gardens



Windsor Golf Course



We must embrace the natural beauty of Florida's native plants. Our native oak trees are not ornamental trees! As I've shown you, they have purpose. They are not meant to be pruned to mimic an African baobab tree or Asian bonsai.

This presentation is not referring to fruit trees or non-native ornamental trees.

Our native trees, primarily southern live oaks, laurel oaks and sabal palms, when fully leafy, intercept a significant amount of rainfall that otherwise would become polluted stormwater runoff, that is carried to the Lagoon. They must have their branches and leaves to do this good work, so organic care is best. When you keep rainwater on your property, confined to your yard, by native plants and trees absorbing it, you help stop pollution of the Lagoon.

Organic care of native trees will save you hundreds and thousands of dollars that you can use instead to buy and install native plants.



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Spending over \$300,000 in less than a decade for annual pruning this is what we got in my COA...

On March 17<sup>th</sup>, 2017, I came out of my 2nd floor condo to see the oak that shaded us from the west sun *gutted*...I was shocked and horrified. No birds were going to be visiting my tree. This tree is what lead me to start asking questions and to develop this presentation. These are recent photos- the tree will never recover.

Beautiful organic unpruned oak  
2020



Misshapen dying pruned oak 2021



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This *was* a fine example of an unpruned live oak in Vero.

Not only is this tree now dying from the top from pruning, but many branches underneath this ragged canopy are dead too.

University of Florida

# Landscape Plants

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## Overlifting

Removing too much interior foliage, referred to as over-lifting or lions-tailing (see photo) removes branches that previously provided dampening of movement in wind storms. Without this dampening, main branch movement can increase in a wind storm. This is thought to lead to contribute to damage in storms. Overlifting also removes many live branches that provided a food source for living cells inside the wood. Living cells within the wood die as a result. This can lead to disfunctional wood and cracks.



Inside the trifold brochure I provided, is a photo illustrating one pruning technique called “over-lifting” or “raising the canopy” in which *many* lower branches are removed leaving all the weight of the tree at the very top.





INAPPROPRIATE  
PRUNING!

## Lions-tailing

- Foliage concentrated at the tips of branches because inner branches are removed
- Branches droop from the weight of foliage only at the tips, necessitating continual pruning
- More susceptible to hurricane damage
- Difficult if not impossible to restore (tree does not replace the same pruned branches—new branches are at 90 degrees and useless for birds to perch)

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Another technique of pruning, Lions-tailing, is when trees are cleared of live foliage all along the lower and interior parts of the main branches.

This places more foliage exactly where you do not want it; that is, at the ends of the branches and the weight of the remaining leaves being primarily at the tip causes a lion's tailed tree's branches to droop. This is simple physics.

I've had plenty of opportunity to observe the response of severely pruned oaks in my COA. As I've studied the architecture of these trees, I've noticed that compared to an unpruned oak's branches which angle gently upward, a pruned tree with a few large branches and leaves at the tips remaining after pruning, tends to have drooping branches. These branches now continually droop onto man-made structures such as buildings and over cars in parking lots, and get in the way of mowers underneath. Unfortunately, then property owners demand more pruning. However, it is the fault of the pruning, not the tree!

Pruning also exposes the bark and remaining large branches to wind burn and sun scald, so the drooping helps it shield its skin, as it were, from the elements. An oak with Spanish moss probably would have a lot of its skin exposed if not for these epiphytes which take advantage of the sunlight into the pruned tree, and actually help shield the bark from further wind burn and salt scald.



## Remove live foliage only for a good reason! (UF/IFAS)

Excessive sprouting as a result of stress caused from over pruning.



A pruned tree in which all but large branches are removed and thus also many leaves, is now in a state of starvation. In desperation, the tree branches reach further out so it can sprout along a greater length to create more leaves for photosynthesis. This compensatory response causes the tree to grow wider instead of maintaining its natural round shape according to its DNA, increasing the risk of branches growing over a roof.

Refrain from removing any sprouts from an over-pruned tree. This is an attempt by the tree to rebuild energy reserves removed from severe pruning. A myth perpetuated by tree pruners is that they need to come back year after year to remove these sprouts, which they caused by their aggressive and inappropriate pruning!

Be aware that pruning is a known cause of spreading disease from one tree to another by infected tools. I would hesitate to believe anyone who told me they always disinfect their saws and other tools between *EACH* tree.



Sprouts  
become  
unnatural  
90 degree  
limbs

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When you see these unnatural 90 degree elbows on tree limbs, you know the tree has been aggressively pruned and in response, formed sprouts along remaining branches desperately trying to create leaves and reaching further toward sunlight to make sugars to feed itself.

**EXCESSIVE CANOPY  
RAISING makes a  
tree top heavy &  
MORE PRONE TO  
HURRICANE  
DAMAGE**

INAPPROPRIATE  
PRUNING!



Excessive Canopy raising or “limbing up” is another egregious pruning technique. The pruning methods I’ve shown you are allowed by municipal ordinances, in some cases specifically mentioned as approved by ordinance.



## Harm from Pruning

Removes  
benefits to us  
and environment

Diverts energy  
production to  
wound healing

Depletes tree  
energy reserves

Bark splitting,  
potential disease

Increases risk of  
failure in wind  
event

Besides wasting money unnecessarily, pruning makes trees susceptible to infection, decay and death sustained from pruning wounds, limb breakage, sun scald, wind burn, sprouting, starvation and uprooting. The unhealthier the tree from pruning, the more money generated for those in the lucrative tree pruning business, who you will call to remove and replace the diseased or dead tree, continuing the aggressive annual pruning cycle with a new tree in its place.



## Thinning Lions-tailing Raising

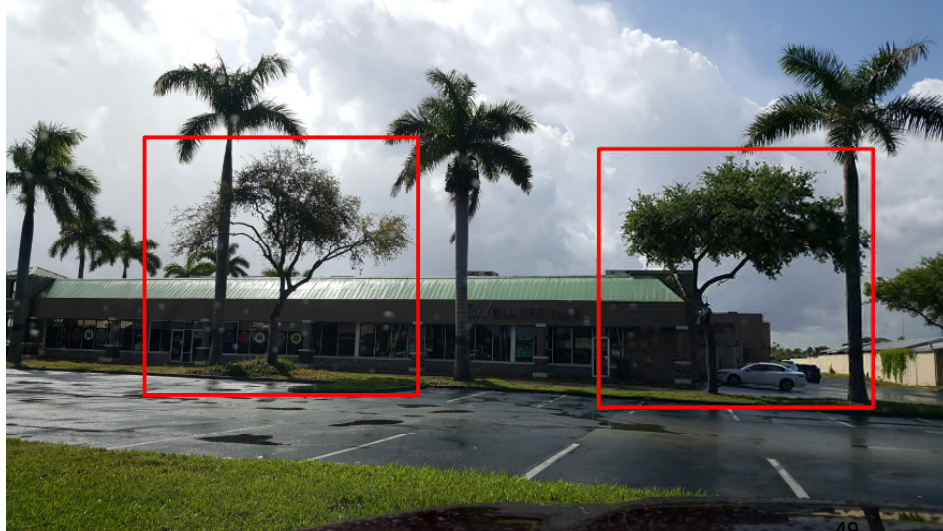
### Removing leaves through these pruning methods:

- Takes away homeowners' privacy by removing the visual buffer between the road and cars in the parking lots and between condominium buildings
- Exposes homeowners to noise of cars and pollution from cars driving on the community road and other busy streets
- Destroys protective habitat for Florida native birds and migratory birds to rest, breed and nest

When limbs and leaves are pruned, where is the noise buffer from cars, and where is the visual buffer so I'm not looking into my neighbor's condo? And where are birds going to hide? They're fully exposed to predators!



## By the Majestic Theatre Severe over thinning and lifting



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Why do municipalities require oak trees in tiny or narrow parking lot islands when they know the tree needs 20 to 40 feet of growing space? The shade they provide is coveted. *That's where I park!* However, if the trees are pruned year after year supposedly to keep the tree limbs off of vehicles, the pruning actually makes the limbs droop more. Pruning keeps municipal maintenance departments and tree pruning companies busy at tax-payers expense!



## HAMPTON INN





## Vero Beach Museum of Art

Young trees.

Will these trees live?

If they do live, will they ever be  
the beautiful trees they were  
meant to be?

When we plant trees shouldn't we expect them to grow into their most mature and beautiful selves?

## What studies don't say...

Live oaks in high winds:

- What was the damage between different pruning types and NO pruning?
- Did the trees uproot?
- Quantify the amount of foliage lost and limbs broken.

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From our local UF/IFAS I obtained research articles about pruning of trees in relation to damage of trees from hurricanes.

As a medical professional, I am familiar with interpreting scientific studies. Often what studies DON'T say is more critical than the recommendations.

Observational studies I reviewed, lacked information about the condition of the trees before a wind event to compare with *post* wind effects. Controlled studies created artificial high winds from a fan to determine effects of different pruning types, but the injuries to the trees weren't quantified as to the amount of foliage and limbs lost. These controlled studies used young oak trees as subjects so findings could not be extrapolated to mature trees. These studies presumed that pruning protects trees from wind when comparing pruning methods and thus I had to conclude that the studies did not prove that pruning prevents injuries to trees during high wind events.

From: Gregory Dahle [mailto:Gregory.Dahle@mail.wvu.edu]  
Sent: Friday, August 31, 2018 10:09 AM  
To: Mark Katherine Booth Rademacher

--Greg

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<http://trees.wvu.edu>

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Read: to confirm what I suspected, I began contacting those considered to be “experts” on the pruning of hardwood trees. Dr. Gregory Dahle concurred with my conclusion by his meta-analysis of the literature.

So, **why** are mature oaks throughout Sebastian, having their lower branches, interior branches, *and* foliage *unnecessarily* removed by pruning?

## MYTHS VS. TRUTH

Florida oaks were here long before Europeans arrived and have thrived for centuries **WITHOUT** pruning!

- It's necessary to strip the oak tree by pruning to prevent it from uprooting in high winds or from dropping branches: **NOT PROVEN** scientifically. What is true is that small branches buffer large branches and the low branches, relatively short trunk and extensive roots keep the unpruned tree rooted in wind.
- Pruning the branches to allow air to flow through the tree prevents it from uprooting in high winds: how can this be? **The tree PRODUCES air!** More leaves = more oxygen.
- It's necessary to prune the branches to allow sunlight into it for a healthier tree. What the arborist is really saying is now you'll be able to grow a lawn underneath the tree. Pruning **defeats the purpose of the tree—shade**, and causes remaining branches to droop due to loss of structural integrity.
- Laurel oaks don't live more than 50 years: **NOT PROVEN** scientifically. **The opposite has been proven:** A database of laurel oak ages proves these trees age well. Biodiversity is important to natural ecosystems. Why do laurel oaks and southern live oaks co-exist if only one oak is needed?

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BECAUSE OF MYTHS, NOT SCIENCE. You may have heard that it is necessary to prune an oak to prevent it from failure in high winds, but this is a myth. What is true is ...

It's a myth that pruning the branches to allow air to flow through the tree prevents failure in high winds. The tree produces air! More leaves = more clean air and oxygen for you and me.

It's a myth that a tree needs sunlight into it. Wind moving branches and leaves exposes every leaf to sunlight. What the arborist...

It's a myth that laurel oaks don't live more than 50 years. A database



## Bottom Line: Follow the Money

In Florida, **NO TRAINING** is required for anyone wanting to prune trees

- Tree pruners calling themselves “arborists” are **NOT LICENSED** as professionals by the State of Florida
- Tree pruners pay a business tax to Indian River County, which is not a license, and there is no penalty for not paying the tax nor non-renewal
- Only minimal requirements are needed to advertise as a “certified arborist” by the International Society of Arboriculture [ISA] or other similar organizations \*
- There is **ZERO ACCOUNTABILITY** for tree pruners in Florida
- Unlicensed, untrained tree pruners have enormous earning power and use myths and unproved reasons to persuade municipalities, homeowners and HOA's to prune native trees year after year
- Due to high demand for unskilled labor, arboriculture is one of the **top ten AT-RISK industries for human trafficking, slave labor and illegal immigration**

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When I followed the money I discovered these facts, all of which you can verify for yourself.

\*After 3rd bullet: An ISA certified arborist has 3 years of experience of pruning, which we have proven is not based on science, has passed a one-time written examination, and has minimal continuing education with payment of annual dues. One local “arborist” admitted he did not have a high school education and tree pruning was a business he could start right out of prison with a truck and a chainsaw. He also fled the scene of butchered trees when I called the county to see if he had paid his business tax. He had not and the county had no intention of requiring him to do so. All of this I sent in a complaint to the County with the response that the county rescinded its tree protections in 2012 and there was no action they could take. Pruners want to argue with you that the tree has “inclusions” or some other poor structure and will fail prematurely. You know what, the tree will thrive all the same without pruning. Trees are designed to succeed.



## Pruning for Clearance

- Clearance is the only legitimate reason to prune a native tree
- Clearance over a man-made structure can be achieved by shortening low branches gradually rather than removing them (UF/IFAS)

Clearance is the ONLY legitimate reason to prune a native tree!

Pruning is unnecessary when the tree is planted in the right place with room to grow!

If you mistakenly planted a tree too close to a man-made structure, or bought the property with the tree already planted, and are then routinely having it pruned, although it is unfortunate, consider removing it. Frequent pruning of trees, shrubs, or any plant, interferes with wildlife's ability to make a home in it.

In it's place, plant a bed of natives or a small or medium sized native tree from a list generated by the FNPS website and be careful to give the new plants sufficient room to grow to their mature size.

A damaged or  
“dead” tree  
continues to  
provide  
housing for  
plants and  
animals



Florida Urban Forestry Council

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This black Fulvous duck is nesting in a damaged oak tree swathed in Spanish moss.

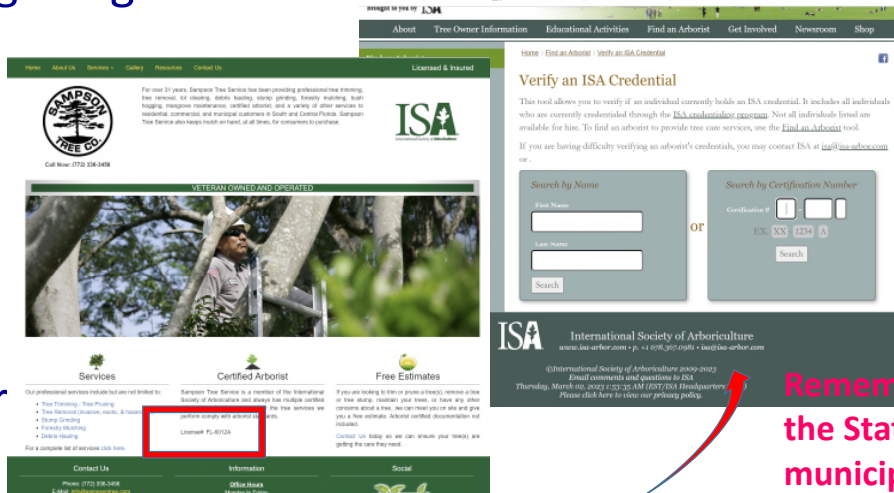
In the situation of naturally occurring disease or damage, such as a large broken limb from a storm, minimal tissue can be removed and the tree recovers. *Do not let* the pruning company prune anything else just because they're already standing in your yard!

*[if you have time speak on lethal bronzing. The conclusion is that removing the palm will not stop infections of other palms. The leafhopper insect that carries the bacterium responsible for the disease lives in turf grass. And by the time it is noticed that the tree is failing, there's no cure. If the palm is in an inconspicuous location, it's acceptable to let it remain in place for woodpeckers and birds of prey to enjoy as it eventually dies. ]*

Audubon image of black Fulvous duck

College degree? References? Supervise on site?

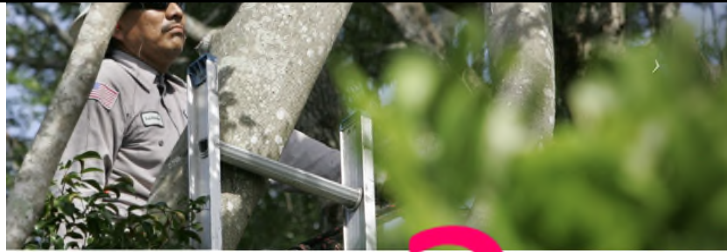
What's the plan for each branch?



Remember-Not the State nor municipalities license arborists

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When hiring a tree pruner to prune for clearance over a man-made structure, first ask for references and photos of their work. If your look at other customer's trees and/or photos do not show topping, thinning, over-lifting, raising, hat-racking or lion's tailing or lolli-popping, next ask what qualifications the pruner has. If certified, does he/she have a bachelor's degree and in what field of study? And will he/she be doing the work themselves, or others do the work and will they be onsite the entire time to supervise? And are the workers here legally? Get the bid in writing of the exact plan to prune each tree. Pruning should be nothing more than taking the tips off to provide clearance for a man-made structure. If trees are adjacent to one another, let them overlap—don't prune to keep them separate. The trees know where their branches are. Their limbs can interconnect the same as their roots do.



### Certified Arborist

Sampson Tree Service is a member of the International Society of Arboriculture and always has multiple certified arborists on hand to ensure that the tree services we perform comply with arborist standards.

License#: FL-6012A



### Free Estimates

If you are looking to trim or prune a tree(s), remove a tree or tree stump, maintain your trees, or have any other concerns about a tree...we can meet you on site and give you a free estimate. Arborist certified documentation not included.

[Contact Us](#) today so we can ensure your tree(s) are getting the care they need.

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[Social](#)

[Office Hours](#)  
Monday to Friday



**Remember-Not  
the State nor  
municipalities  
license arborists**

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Licensed? Really?



Care for your sabal palms organically too. ***Don't prune!***

Sabal palms need the brown fronds for its daily vitamin, the squirrels eat the fruit, and the bats sleep in the boots under the fronds. A colony of bats may eat upwards of 1 million insects per night, including mosquitoes.

Pruning the brown fronds means you have to spend \$ to fertilize the tree and these granules inevitably wash off into the Lagoon! Fertilize it the organic way by leaving the fronds on! The brown fronds are a critical source of daily potassium for the tree. Brown fronds absorb stormwater too!

Leave your native oaks and sabals alone and the environment and your wallet will thank you!

## Benefits of Organic Tree Care (NOT Pruning)



- Saves \$ for homeowners, HOAs, municipalities
- Stormwater storage by all parts of the tree
- More leaves = more O<sub>2</sub>, less CO<sub>2</sub>
- Native trees are healthy and beautiful
- Organic trees continue to host abundant and diverse plant and animal life
- Natural purification of air and water
- Organic canopy reduces Summer heat, energy costs
- Offsets human carbon impact

Homeowners, hoas and municipalities save hundreds to hundreds of thousands of dollars annually by organic care of native hardwoods.

It's so important in Florida to have shade trees in the yard to cool the air around our homes.

So how is native plant landscaping and leaving your oaks and sabals unpruned, "solutions to stop pollution" of the lagoon? Full leafy canopies of mature oaks and unpruned sabals absorb thousands of gallons of water per year keeping rain on your property and percolating through your native groundcover, filtering it as it drains to the aquifer, instead of contributing to stormwater runoff which carries all kinds of pollution to the Lagoon and the ocean.



## Nature Deficit Disorder, Rx: Forest Bathing

- Average American spends 93% indoors, 10 hours of that connected to innumerable electronic devices (more than sleeping)
- Wherever there are trees, people are healthier and happier
- After a walk in a forest, study participants were less anxious, slept better and slept longer
- Afternoon walks were more beneficial than morning walks. (Afternoon walkers probably walked more leisurely, whereas morning walkers had time pressure)

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There is actually a thing called nature deficit disorder and the cure is forest bathing!

I grew up taking long walks with my dad in a state forest close by and I learned to love trees!

## Benefits of Walking in Treed Areas

- Reduces stress, sadness, anger
- Increases feeling of vigor and liveliness
- Physical benefits: lower cortisol, blood pressure and pulse rate
- The **aroma** of trees is associated with improved immunity, reduced anxiety and increased pain threshold
- The **aroma** of evergreen trees contains a natural air disinfectant
- Being among trees generally requires some exercise, which itself reduces depression, anxiety and obesity/metabolic syndrome



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Other benefits found from walking in forests are reduced stress, increased vitality, and these physical benefits....

Even the aroma of trees has psychological and physical health benefits! We should plant more pine and cypress!

**Looks good but could be great!**

**To protect the base of palms, choose a native bunching grass and a sustainable mulch instead of cypress mulch**



## The Many Benefits of Trees

Trees clean our air, water and soil. Trees add greatly to our health, sense of well being, and quality of life.

The presence of trees in a healthy urban forest equates to a healthier and more sustainable community

- ✓ Trees offset or "mitigate" our carbon footprint by storing particulate pollutants in air and rain, e.g., carbon, ozone, nitrogen oxides and sulfuric oxides.
- ✓ Conservation is important because mature healthy trees (>30" diameter) sequester 1,000 times more carbon than small young trees.
- ✓ Locating trees East, West, and South saves up to 30% energy bills and decreases emissions from power plants and their negative effect on air quality.
- ✓ Having trees over parking lots, reduces urban heat island effect and evaporative emissions from fuel tanks of vehicles (16% of all hydrocarbon emissions). Reducing UHI decreases formation of ozone which is dependent on higher temperatures.
- ✓ Biomediation or phytoremediation by all parts of trees and plants, removes and neutralizes contaminants in polluted water and helps retain the top organic layer of soil.
- ✓ The greener and more sustainable an area becomes in the future, the more successful economically. Homes with healthy trees can have up to 20% higher value.
- ✓ Other benefits of urban trees: increased privacy, reduced stress, crime, and noise pollution

Organic care of your native oaks and sabal palms is leaving the branches, leaves and fronds on, allowing the trees to provide all of these benefits to ourselves *and* protect the Lagoon.

## Landscaping impacts our \$ and our health

- Are you willing to question the consensus of how your landscape has historically been maintained?
- High value, no to low-cost solutions have been offered
- Problem solutions based on science can change how your landscape is maintained
- The transition can be gradual as opportunities present
- Are you willing to use what you've learned today to propel yourself and your community in a better and healthier direction?

## Talk to Your HOA, COA



In an HOA or COA, landscape maintenance can easily consume a sizeable portion of the operating budget when including tree pruning and tree and palm fertilization. 3 years ago landscaping was 25% of my coa's operating budget. Now because of the tremendous increase in property insurance it's 17%, still quite large. Remember a native plant landscape costs 60% less to maintain than a landscape composed of non-native exotic turf and non-native plants.

Present a plan to the landscape committee and board of directors: With the thousands of dollars saved by organic care of your native oak trees and sabal palms, purchase native groundcovers to swap for turf, starting small, planting them in any narrow strips of turf to eliminate those mowing and edging areas. Plant more trees and allow oaks and cedars to self-mulch, which will take up space that was previously turf.

Then with savings from decreased lawn maintenance and fertilizer/herbicide applications, when turf, non-native trees or shrubs and flowers need to be replaced, swap them out with natives.





# NATURAL FLORIDA BEAUTY

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## Questions?

Katherine Booth

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We are available to give presentations of shorter length to associations, association managers, realtors and developers to promote the benefits of native plant landscaping and organic native tree care.

- Thank you for LISTENing.
- Are there any questions?
- Repeat the questions before providing answers.
  
- If you don't know the answer, say "I don't know, but I'll research it for you. Let me have your contact information afterward".
- OR "That's pretty involved. May we speak afterward?"
- OR "you sound upset. I understand. I'm upset everyday by seeing the evidence of egregious landscaping and pruning practices everywhere I go. I'm available to address your criticisms afterward. Thank you for giving other people an opportunity for questions."