
Right Plant, Right Place by Habitat
Presented by:
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United States of America
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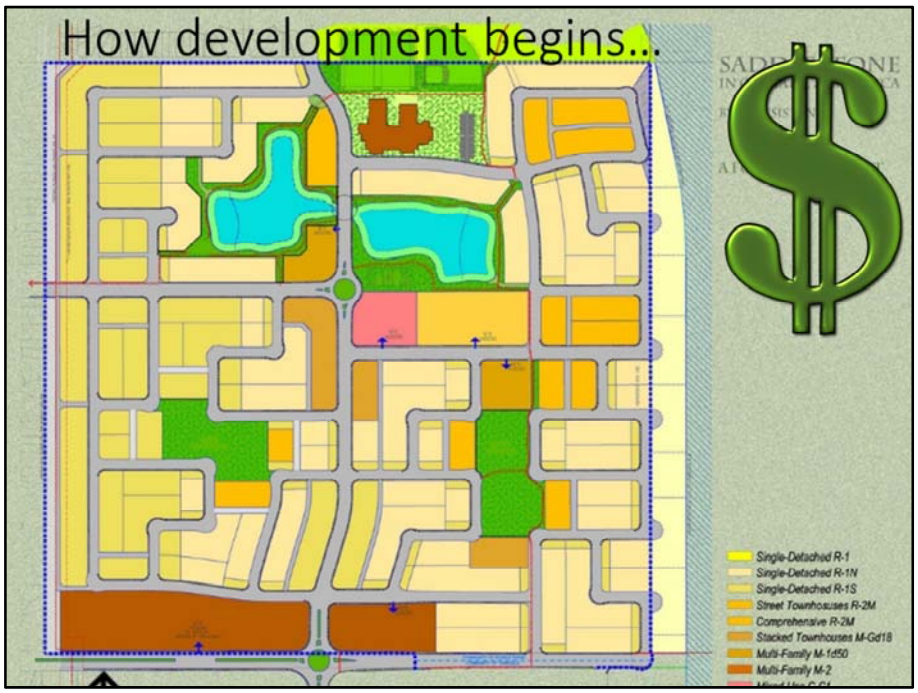
UNIVERSITY of FLORIDA

What I'll Cover

- Reasons why landscapes need to change
- Common habitat types
- Plant selection guidelines
- Reference books
- Examples of converted landscapes


How development begins…
Single-Detached R-1
Single-Detached R-1N
Single-Detached R-1S
Street Townhouses R-2M
Comprehensive R-2M
Stacked Townhouses M-Gd18
Multi-Family M-1d50
Multi-Family M-2

They start with a pristine habitat full of animals, insects and plants that all work together and have evolved together for millions of years. This habitat provides many ecosystem services such as local climate regulation, air and water cleansing, water supply retention, erosion and sediment control, pollination, habitat functions, waste decomposition and treatment, human health and well-being, and cultural benefits.

Adding insult to injury, all the landscape plants replacing this once pristine habitat are from some other country (exotic), and not part of the Florida ecosystem. This new system now requires massive uses of energy and water. Water, machinery, pesticides and fertilizers now contribute pollution instead of cleaning the system.

In 60 years this landscape did not really change. It is still mostly mowed lawn with a few exotic plants hugging the house. Some trees were cut down because they were too close to the house.

This was taken during our worst drought in 103 years. This landscape is not sustainable, but requires many resources to stay alive.

This yard was in the same neighborhood. How much water do you think this landscape used? What other resources do you think were used? Does it provide refuge?

This landscape is filled with exotics. The large schefflera in the middle is an invasive species. You can also see them in the background too. Which exotics will become invasive? Why do we continue to use them when they have this potential? There are no native plants to provide for the native animals.

This is a step in the right direction. They are using drought tolerant plants in a sandhill location. They are providing flowers for pollinators. What is wrong here though? (they are using *Lantana camera* – an invasive species – although this one is supposed to be sterile). None are 100% sterile. Why not use the native Lantana depressa which is low growing like this one?

Reasons why a change is necessary

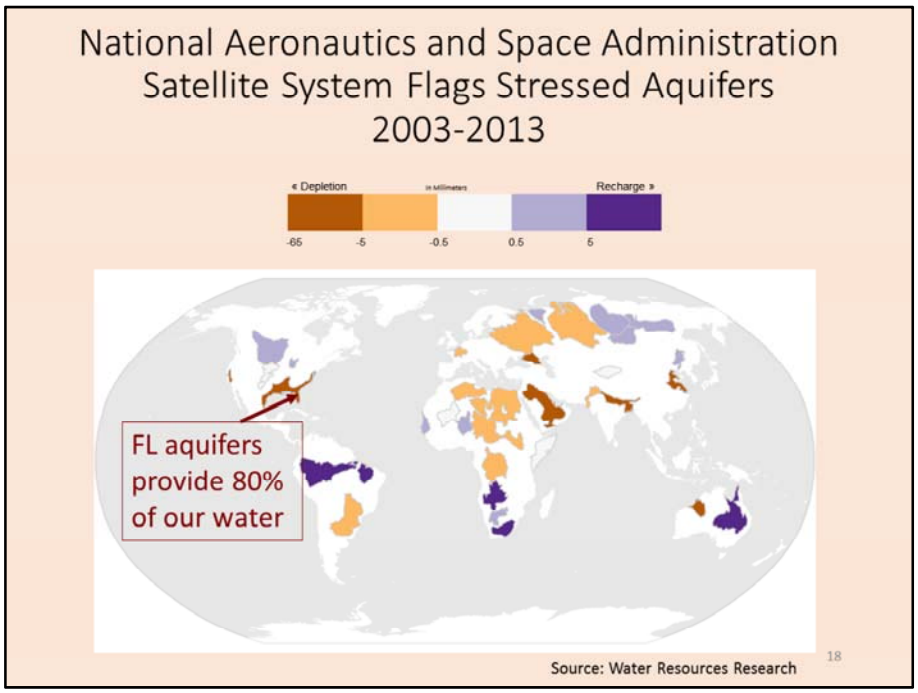
Need to add your county statistics.

Ask if anyone knows “How did mercury get into our water?” Coal burning and mining of iron release mercury into the air and then it falls directly into **water** bodies or onto land, where it can be washed into waterways. When **mercury gets** into **water**, bacteria can change it into a form called methylmercury, which is absorbed by tiny aquatic organisms. Through the process of biomagnification, **mercury** levels in each successive predatory stage increase. Air quality standards were put into place to prevent more pollution from happening. Be vigilant about preserving these air quality standards.

What do you think about the bird? Would you want to fish in this? Would you want to eat anything from it? What about the bioaccumulation of mercury? Is there a shoreline so the bird doesn’t have to jump in the water?
Need to add your county statistics.

Is this acceptable?

Is this acceptable?



This map shows the annual change in groundwater storage from 2003 to 2013.
21 of the worlds 37 largest aquifers- located from China to the United States - have passed their tipping points, meaning more water is being pulled for use than is replaced. Major aquifers are losing the struggle to keep pace with agriculture and growing populations. In Florida, our underground aquifers provide 80% of the water used by humans.

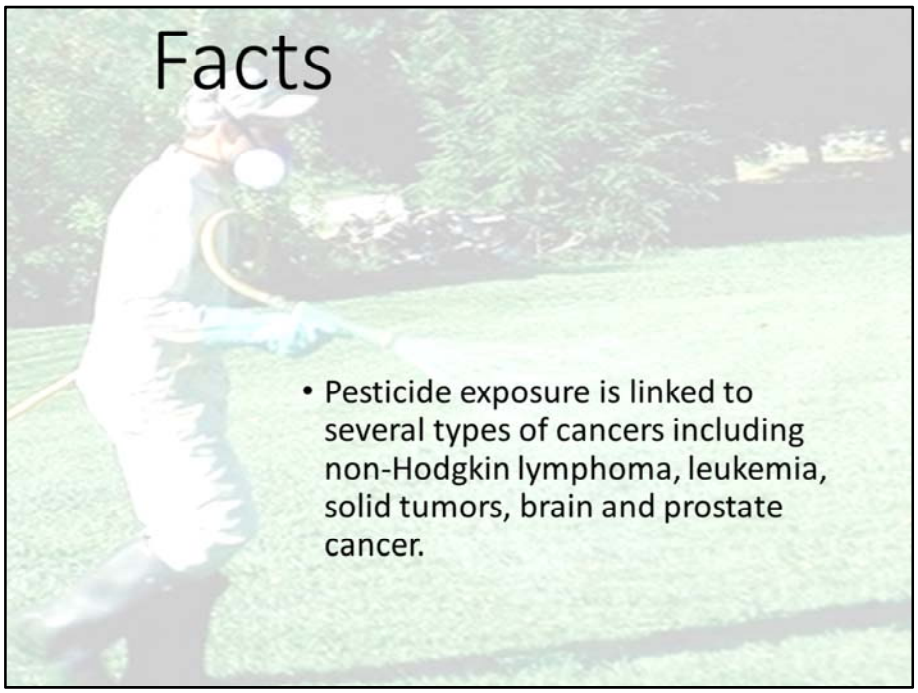
National Emission from Lawn and Garden Equipment (EPA)
https://www.epa.gov/sites/production/files/2015-09/documents/banks.pdf

What does your neighborhood sound like? How often have lawn mowers, blowers or weed whackers destroyed your sleep, or a peaceful setting? Health Effects of Environmental Noise Pollution https://www.science.org.au/curious/earth-environment/health-effects-environmental-noise-pollution research shows that exposure to prolonged or excessive noise causes a range of health problems ranging from stress, poor concentration, fatigue from lack of sleep, to more serious issues such as heart disease, brain damage, tinnitus and hearing loss.

Fumes from

How does noise affect other beings and you?

Even though an animal may not eat insects directly, it is feeding on something that does.

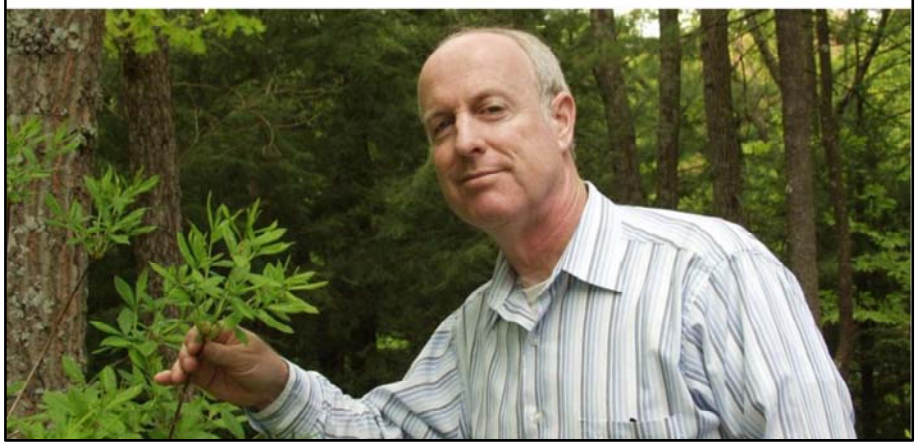


Even though an animal may not eat insects directly, it is feeding on something that does.

- Spraying insecticide damages or kills wildlife including pollinators and other insects.

(Insecticides and Wildlife http://edis.ifas.ufl.edu/in881).

- "Foreign (exotic) plants are poor providers of food for native animals, and lawns are like an asphalt parking lot to them. Native birds are starving to death because we have taken away their main food source – insects" Doug Tallamy



(Dr. Doug Tallamy: "Creating Living Landscapes to Restore Nature's Relationships" https://www.youtube.com/watch?v=HbsAAwpP34E).


Foreign plants don’t support
Florida’s plants or wildlife

The Washington Post
Democracy Dies in Darkness

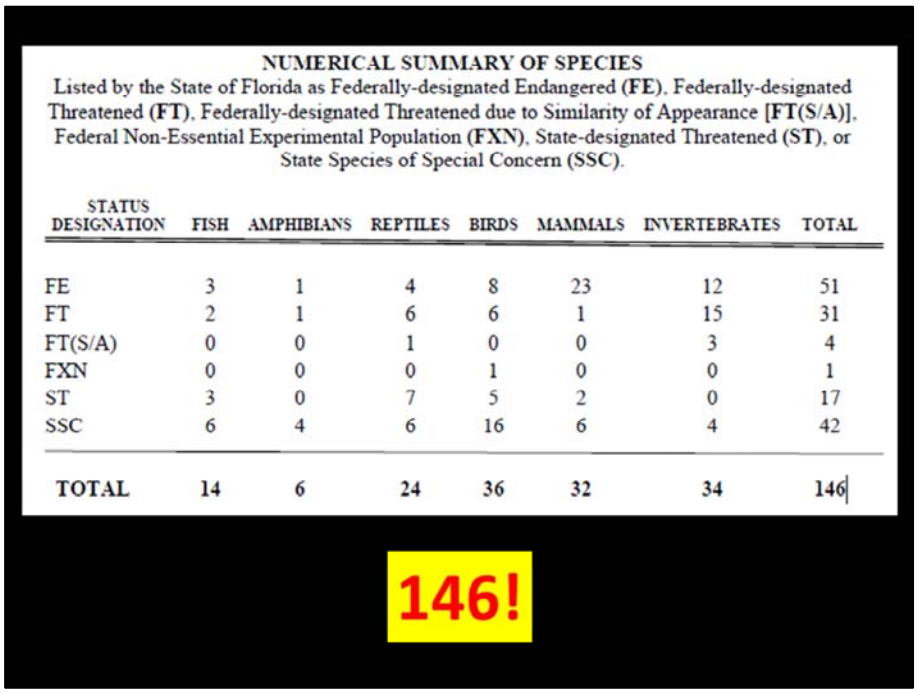
Speaking of Science

'Hyperalarming' study shows massive insect loss

Bugapocalypse

- In 2014, an international team of biologists estimated that, in the past 35 years, the abundance of invertebrates such as beetles and bees had decreased by 45 percent. In places where long-term insect data are available, mainly in Europe, insect numbers are plummeting. A study last year showed a 76 percent decrease in flying insects in the past few decades in German nature preserves.


$500 million



NUMERICAL SUMMARY OF SPECIES

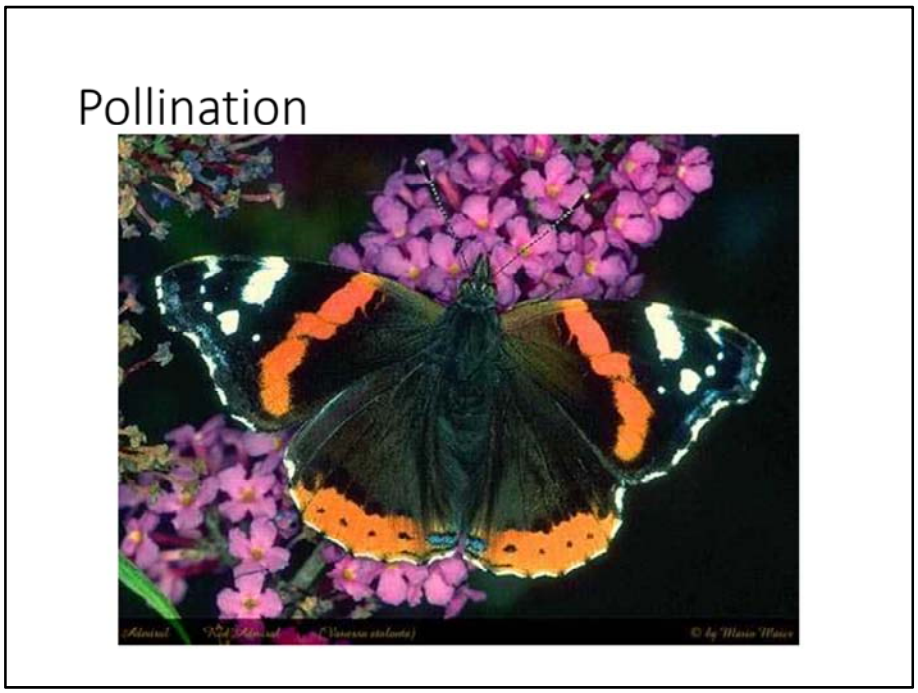
Listed by the State of Florida as Federally-designated Endangered (**FE**), Federally-designated Threatened (**FT**), Federally-designated Threatened due to Similarity of Appearance [**FT(S/A)**], Federal Non-Essential Experimental Population (**FXN**), State-designated Threatened (**ST**), or State Species of Special Concern (**SSC**).

STATUS DESIGNATION	FISH	AMPHIBIANS	REPTILES	BIRDS	MAMMALS	INVERTEBRATES	TOTAL
FE	3	1	4	8	23	12	51
FT	2	1	6	6	1	15	31
FT(S/A)	0	0	1	0	0	3	4
FXN	0	0	0	1	0	0	1
ST	3	0	7	5	2	0	17
SSC	6	4	6	16	6	4	42
TOTAL	**14**	**6**	**24**	**36**	**32**	**34**	**146**

This table provides the details about endangered, threatened and species of special concern. For all the details see: http://myfwc.com/media/1515251/threatened-endangered-species.pdf (January 2016)

These are pictures of some of our endangered plants. There are:
441 endangered,
118 threatened and
8 commercially exploited species.
For a TOTAL of – 567 plants that need our help to survive!!!
61 of these species are on the federal list of endangered or threatened species.

Ecosystem services are goods and services produced by ecosystem processes that benefit humans. Here are some of those services.



Pollinators are needed for reproduction of plant species and crops. Did you know that nearly 90% of all wild flowering plants depend at least to some extent on animal pollination, and of the 1,400 crop plants grown around the world 75% require pollination by animals? Pollinators provide an essential ecological function. Without them the human race and all of our land based ecosystems will perish.

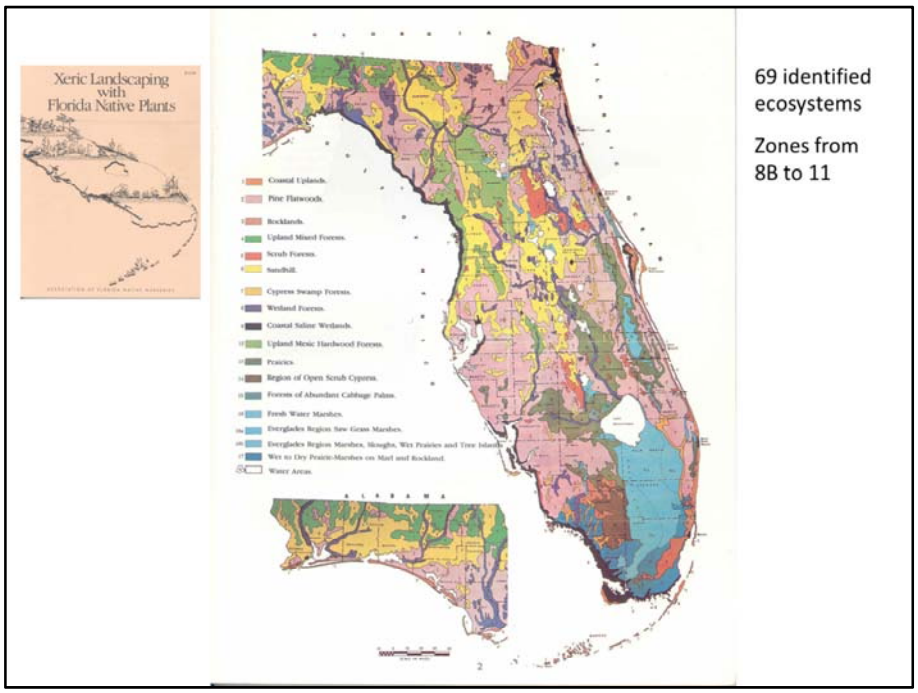
Human health and well-being

How do you feel when you see a butterfly, a bird, a bumblebee, a flower? Have you gone camping or hiking with friends or family? How do you feel when exposed to nature? Nature enhances our physical, mental, and social well-being as a result of our interaction with it.

Trees and other plants produce oxygen and remove pollutants from the air and water. Plants help clean water by filtering pollutants from water, slowing the movement of water and reducing sedimentation. Plants are like little scrubbers keeping our air and water clean, but only if we don't have to use chemicals, fertilizers and machines to keep them growing.

Providing refuge to animals – conservation of biological and genetic diversity

Habitats provide shelter, protection, and reproduction for plants and animals, thereby contributing to the conservation of biological and genetic diversity and evolutionary processes.



This map shows the different types of habitats that were Florida before development. For Pinellas County you can see that Sandhill, Flatwood and Coastal Strand were the primary habitats.

Flatwoods occur on nearly level land. Water movement to the natural drainages, swamps, ponds, and marshes is very gradual. Wet conditions prevail during the rainy season with the water table on or near the surface.
Slash pine, live oak, , sweetgum, red maple, saw-palmetto, wax myrtle, blackberry, gallberry, and blueberry are common plants. Wiregrass, beard grasses, Catesbys lily, and white topped aster are also found.
Wildlife include gray squirrel, gray fox, white-tailed deer, Bachman's sparrow, eastern meadowlark, pigmy rattlesnake, and cricket frog
Endangered species include indigo snake, southeastern American kestrel and sandhill crane

View of a home that kept the pine flatwoods habitat. It is being encroached upon by oaks.

Like being in a natural area. No water, fertilizers or pesticides required.

This and following pictures are different views of pine flatwoods showing the diversity of plants and flowers that grow in this type of environment.

As you can see there is a somewhat consistent look, but there are still a variety of flowering plants.

Sand dunes occur parallel and adjacent to most coastal beaches. Only a few fragmented remnants of coastal strand remain.
Plants must be tolerant of salt spray, wind and alkaline soil.
Natural vegetation consists of low-growing grasses, vines and herbaceous plants with a few trees or large shrubs that are “wind, sand and salt pruned”.
Common plants are beach panic grass, sea oats, blanket flower, beach sunflower, sea purslane, beach morning glory, sea grape, cocoplum, inkberry, saw-palmetto, bay cedar, live oak and cabbage palm.
Indigenous animals include shorebirds, endangered beach mice, endangered sea turtles, lizards, snakes, endangered gopher tortoise, endangered scrub jay and threatened kestrel.
The coastal strand plant community helps to regulate wave action and also reduces storm surge.

These are natural coastal strand pictures. Seagrape and grasses dominate this picture.

Another picture of plants in a coastal strand. Seagrape, grasses and railroad vine in this picture.

Sandhills have Yellowish sands, are well drained, dry and low in nutrients.
Longleaf pine, turkey oak, wiregrass, butterfly pea, and gopher apple are the most common plants of this habitat.
Indigenous animals include fox squirrel, gopher tortoise, pocket gopher and fence lizard
These are rapid aquifer recharge areas.

These are some views of sandhill habitats

Again, just to show you some different pictures of sandhill habitats.

Lots of wiregrass along with the long leaf pine and different wildflowers.

Nice fall color.

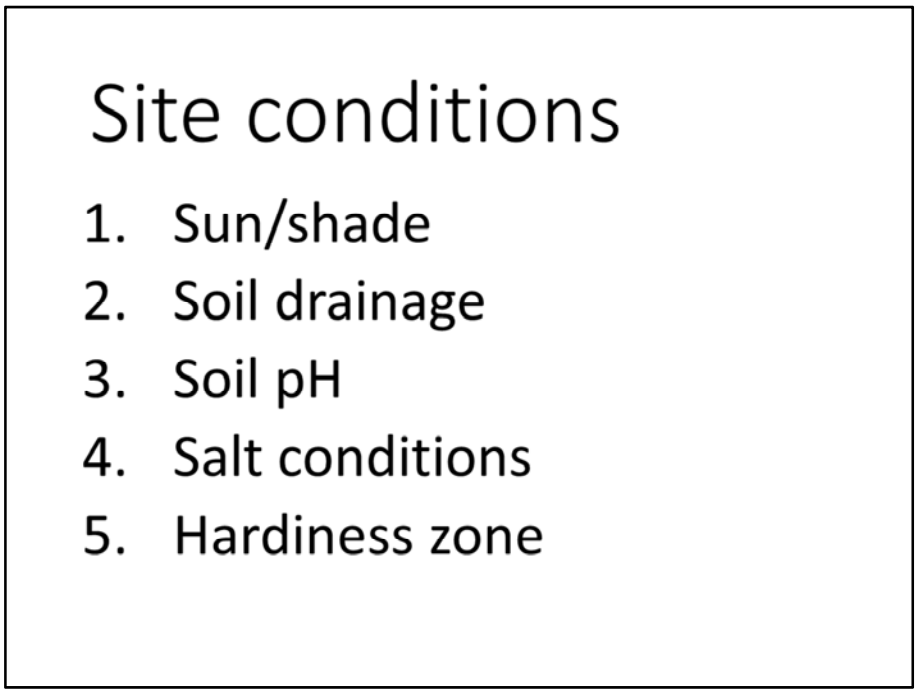
Beautiful wildflowers.

If they don’t burn they get overrun with hardwoods and the habitat is lost.

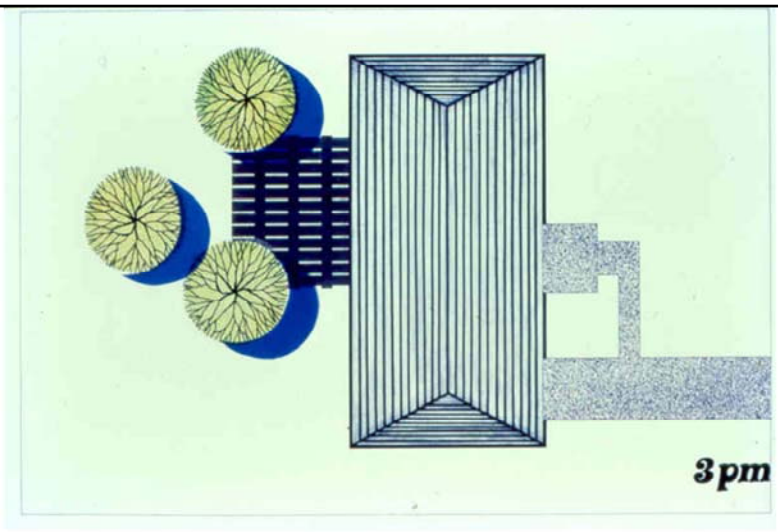
Steps to choosing the right plant

Analyze the site

Go out in your yard and look around. What is your soil like? How much sun to you receive in different areas of the landscape? Are you near the coast? What is your elevation? Careful evaluation of your site conditions now will save you time and money later.



Be sure to check for all of these conditions.



Plan the location of the shade, not just the location of the tree.

When considering where to plant trees make sure that you consider their shade pattern during the time of year you need shade. Place them strategically to provide shade especially to windows and patios.

Soil drainage

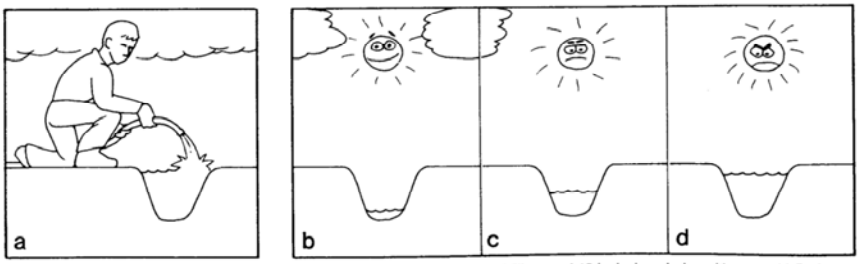
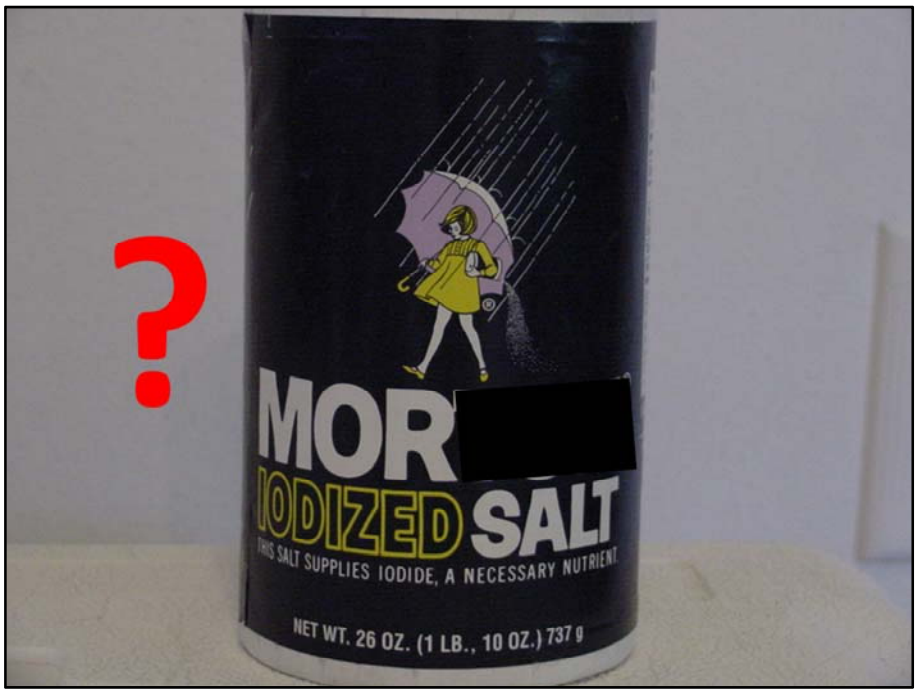


Figure 6. Checking soil drainage. a) Just after it rains 1 inch or more, dig and fill several 18-inch deep holes with water. b) Drainage is good if water drains away within an hour. c) Drainage is poor if water takes several hours to a day to drain. d) There is a high water table if water stands indefinitely.

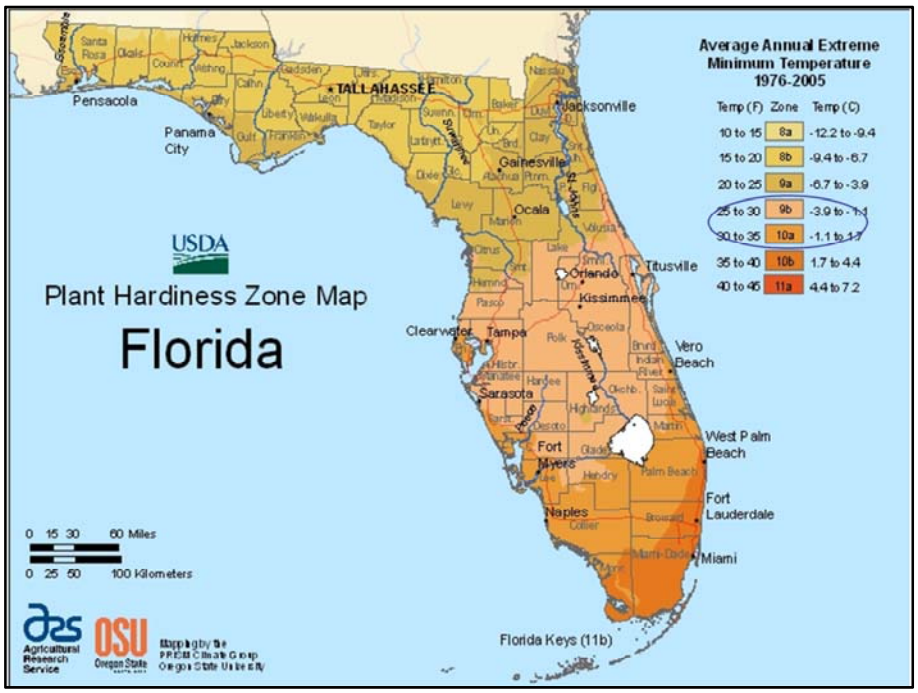
The best time to check your soil drainage is at the end of the wet season. Otherwise do it after an inch of rain has occurred. You may not even need to do this if you see standing water for a day or days.

This is indicative of flatwoods in the summer. Seasonally very wet with standing water, at least in some places.

Anytime you see shell in your soil you will know it has an alkaline pH. This cannot be permanently corrected with sulfur. You have to choose plants that can tolerate alkaline soil. Most likely they will need to be salt tolerant as well. What type of habitat do you think this type of soil might occur in? (coastal strand)



Do you need salt tolerant plants? Do you live near the beach or use reclaimed water? Then you will probably need salt tolerant plants. Remember that even salt tolerant plants have to be established with non-salty water.



Remember to check your cold hardiness zone and choose plants that can tolerate the cold temperatures likely to occur in your zone. Many northern plants cannot tolerate our heat, even though they can tolerate our cold. One more reason to choose local native plants.

Place plants according to:

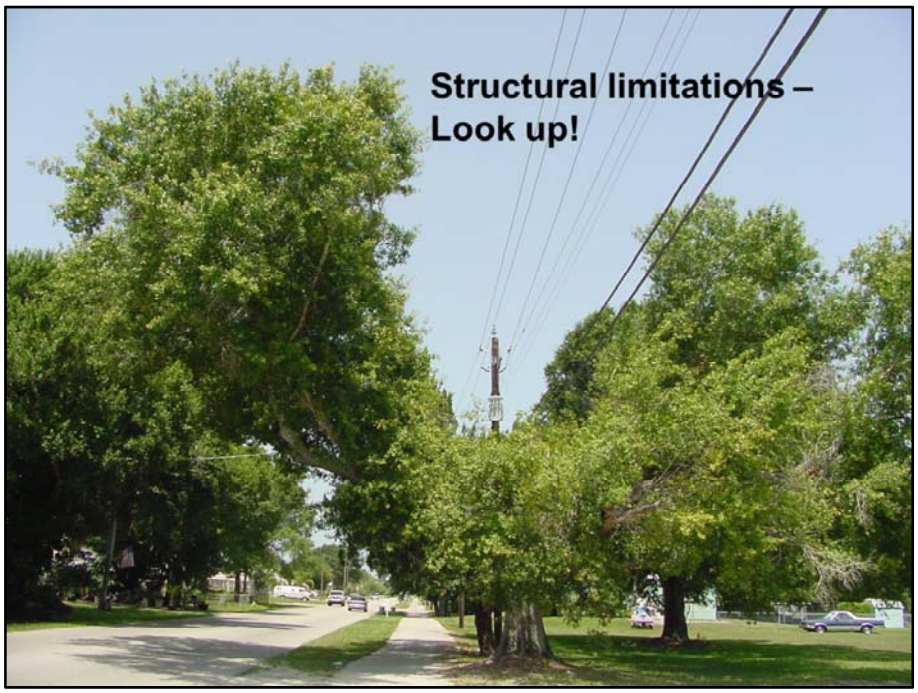
- Structural limitations
- Mature size of plant
- Views to hide, or enhance
- Energy savings - shade

Table 1. Soil requirements for trees based on their size at maturity.

TREE SIZE AT MATURITY	TOTAL SOIL AREA*	DISTANCE FROM PAVED SURFACE
SMALL Height: shorter than 30 ft	10 ft x 10 ft	2 ft
MEDIUM Height or spread: lesser than 50 ft	20 ft x 20 ft	6 ft
LARGE Height or spread: greater than 50 ft	30 ft x 30 ft	10 ft

* Measurements for when rootable soil depth is 3 feet or greater. For soil less than 3 feet deep, smaller maturing trees are recommended.

Make sure to provide enough root space for the size of the tree and keep it far enough away from paved surfaces. Rootable soil depth can vary greatly depending on elevation and soil structure.



Always remember to look up before planting a tree. Check to make sure that neither the height or the width of the mature tree will interfere with any structure.

This tree was planted too close to the house.

There are many beautiful native plants. They also bring in native wildlife that is fun and exciting to watch. If you plant the right plants you won't need a bird feeder and the extra time and cost associated with them. Besides that, bird feeders can be harmful and make birds sick or even cause death.

We can't afford to waste water. This is a precious resource. Use plants that will survive on rainfall once they are established. It is so much easier than dealing with an irrigation (irritation) system and all the things that can go wrong with it. It will also cut your water bill dramatically.

Speaks for itself. Let's not waste our water.

Plant Selection Guidelines

- Use mowed lawn only where needed and functional – purposeful grass.

Grass too many times is the default landscape. Use it only where you actually need it, otherwise use plants that give something back, don't use so many resources, or need so much maintenance.

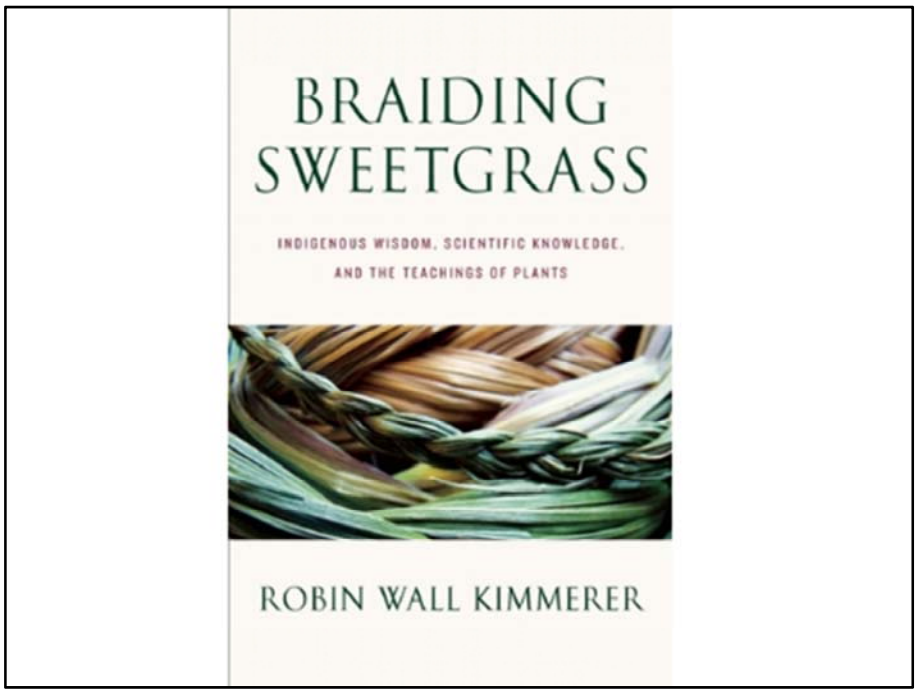
Native plants naturally provide wildlife habitat. The flowers, berries and seeds provide food. They also support many insects, which in turn support many animals. Try and leave a dead tree for cavity nesting birds – cut it off at 10 to 15 feet tall. Try and fill in as much vertical space as possible as this provides lots of cover for wildlife. Remember that grass is just about like concrete to wildlife – it provides no food or cover – unless its for a chinch bug, caterpillar, or mole cricket. Which we then spray with pesticides. These can harm you, wildlife and our water.

Invasive plants are very costly to the environment and the wildlife that depends on the environment. They destroy habitat. They don't seem invasive in our yards because we mow, but they are carried by wind or wildlife or people into native areas and start destroying the native habitat. Be sure to remove invasive species from your yard and try to let your neighbors know about why it is important to get rid of invasive species.

Diversity is extremely important. More diversity = more wildlife and better habitat. It also helps to prevent devastation from insect pests and diseases. Variety is the spice of life! This is what our yards should look like.

Fast growing plants tend to be shorter lived and have weak wood. Better to choose a slow growing tree that will be strong and live long. Remember to allow for the plants mature size. Planting too close is expensive and will cost you much more in the long run.

Good Reference Material…


BRAIDING
SWEETGRASS
INDIGENOUS WISDOM, SCIENTIFIC KNOWLEDGE,
AND THE TEACHINGS OF PLANTS
ROBIN WALL KIMMERER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Plants for your area -- Refine Your Criteria
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Go
Type the first few letters of either the scientific or common name.
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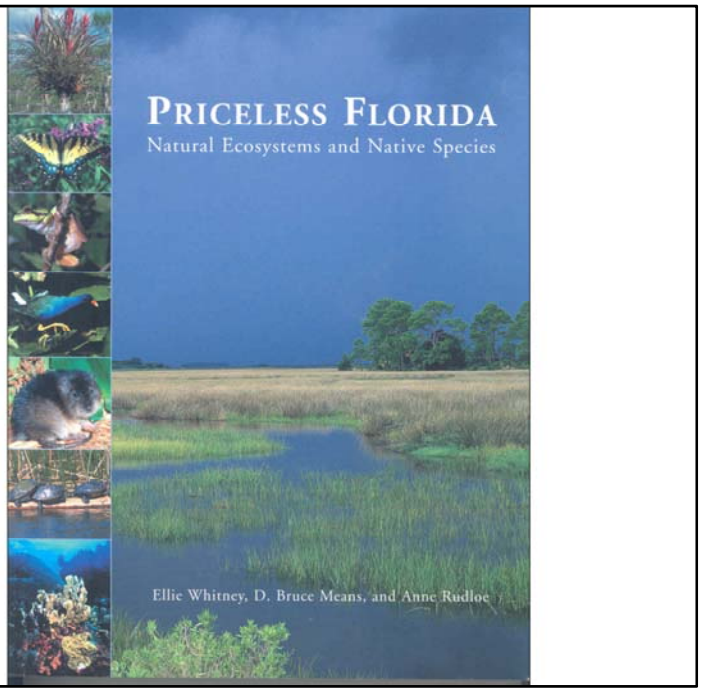
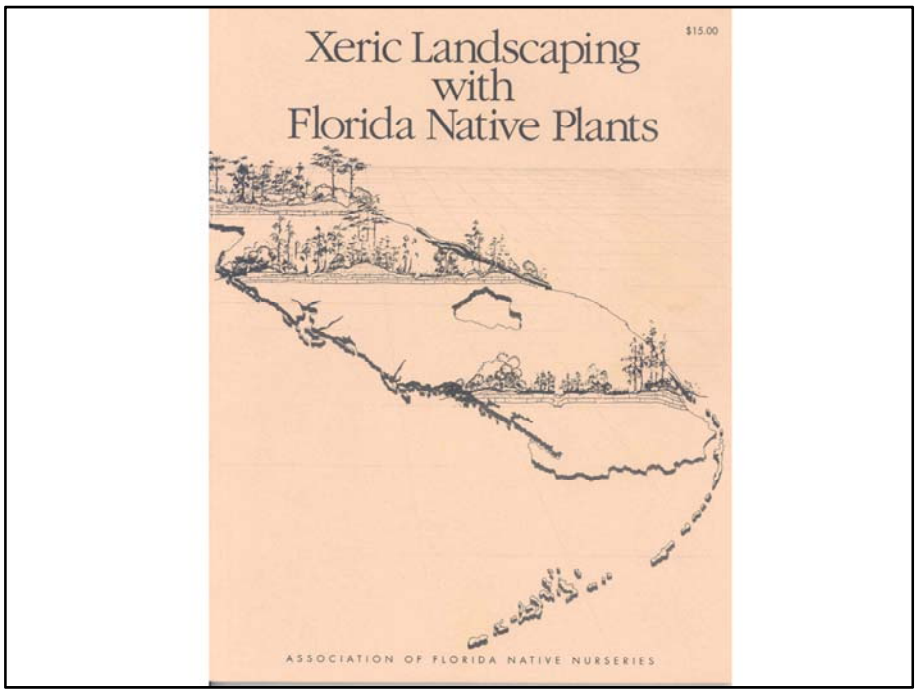
Browse
Find Plants
Generate a list for a specific county, site conditions, and purpose.
Find
www.fnps.org/plants/browse
For your site in Pinellas County...
Tell Us About Your Site
This will help you select the "right plant for the right place"
Light Range: Any Full Sun PartSun Shade
Water Needs: Any Low Moderate High Continuously Wet
Soil: Any Sand Loam Clay (or highly compacted) Organic Rock
Select for Special Interests / Needs
These will limit what you see, so avoid selecting these unless you only want to fill a specific need
Butterfly nectar and host plants: Yes No
Wildlife food and cover: Yes No
Hurricane resistance: Yes No
Salt tolerance: Yes No


PRICELESS FLORIDA
Natural Ecosystems and Native Species
Ellie Whitney, D. Bruce Means, and Anne Rudloe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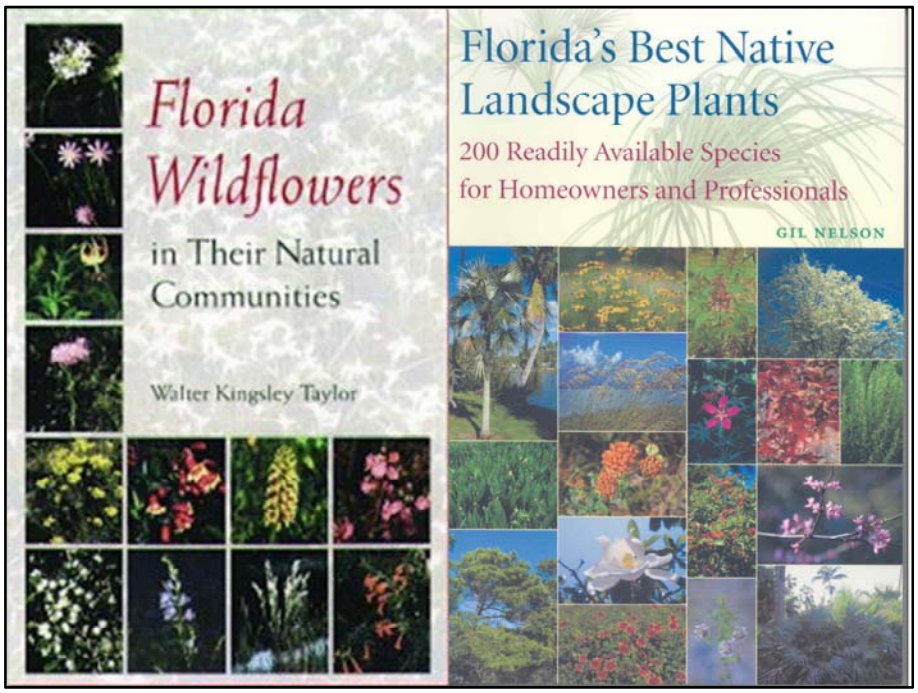
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in Their Natural Communities
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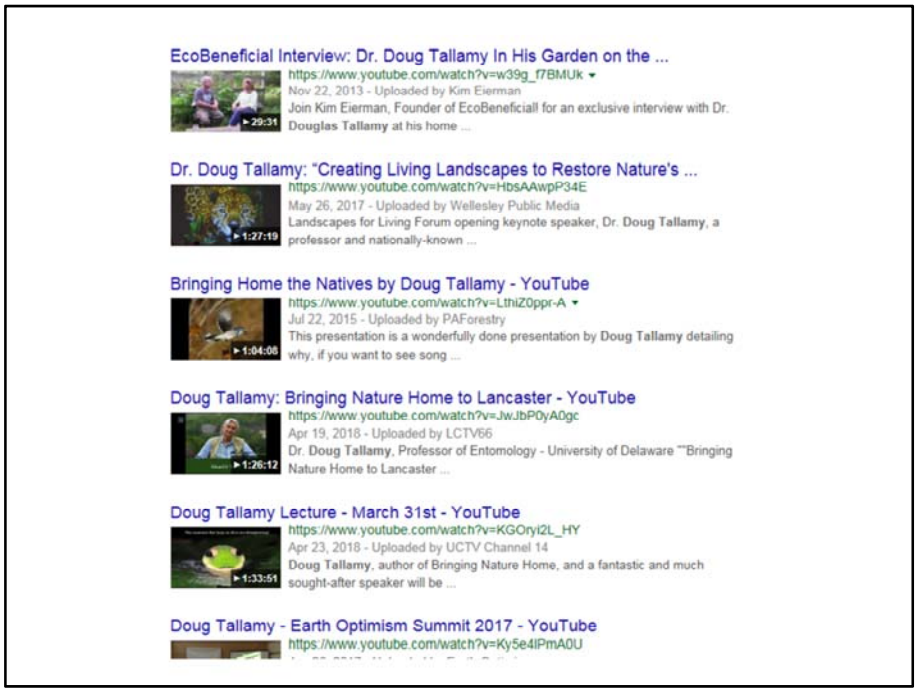
EcoBeneficial Interview: Dr. Doug Tallamy In His Garden on the ...
https://www.youtube.com/watch?v=w39g_f7BMUk
Nov 22, 2013 - Uploaded by Kim Eierman
Join Kim Eierman, Founder of EcoBeneficiall for an exclusive interview with Dr. Douglas Tallamy at his home ...
29:31
Dr. Doug Tallamy: "Creating Living Landscapes to Restore Nature's ...
https://www.youtube.com/watch?v=HbsAAwpP34E
May 26, 2017 - Uploaded by Wellesley Public Media
Landscapes for Living Forum opening keynote speaker, Dr. Doug Tallamy, a professor and nationally-known ...
1:27:19
Bringing Home the Natives by Doug Tallamy - YouTube
https://www.youtube.com/watch?v=LthiZ0ppr-A
Jul 22, 2015 - Uploaded by PAForestry
This presentation is a wonderfully done presentation by Doug Tallamy detailing why, if you want to see song ...
1:04:08
Doug Tallamy: Bringing Nature Home to Lancaster - YouTube
https://www.youtube.com/watch?v=JwJbP0yA0gc
Apr 19, 2018 - Uploaded by LCTV66
Dr. Doug Tallamy, Professor of Entomology - University of Delaware ""Bringing Nature Home to Lancaster ...
1:26:12
Doug Tallamy Lecture - March 31st - YouTube
https://www.youtube.com/watch?v=KGOryi2L_HY
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Doug Tallamy, author of Bringing Nature Home, and a fantastic and much sought-after speaker will be ...
1:33:51
Doug Tallamy - Earth Optimism Summit 2017 - YouTube
https://www.youtube.com/watch?v=Ky5e4lPmA0U

Samples of converted landscapes

Let’s look at several landscapes that have been transformed from a traditional, lawn-dominated model to a nati
model with a diversity of species. This property, as you can see, has little to attract the eye or engage the
imagination.

An imaginative transformation has created a landscape that is visually intriguing and inviting. The plant palette includes native trees, palms, shrubs, wildflowers, and grasses.

Various colors, sizes, foliage types, and flowers provide seasonal interest. This landscape is also much more attractive to wildlife and environmentally friendly.


Mostly lawn, lacking diversity, no layers, no place for wildlife


Diverse, several layers and alive

Before

After

Sterile

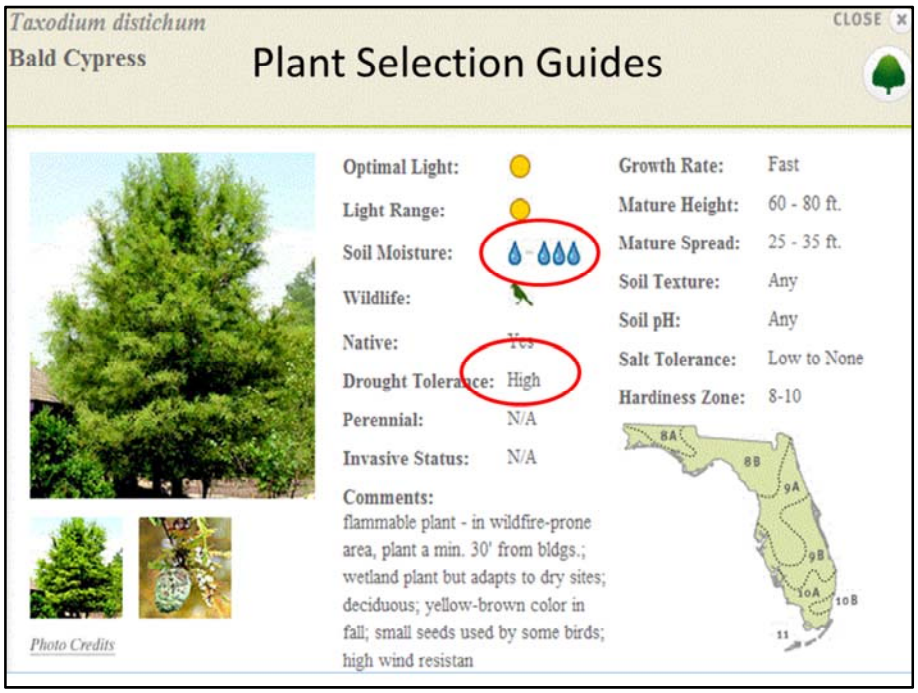
Several layers, diversity, added interest

A lawn doesn't necessarily have to be mowed grass. This looks beautiful and green, sways in the wind and provides more interest and habitat. It can be mowed to the ground every couple of years to mimic fire.

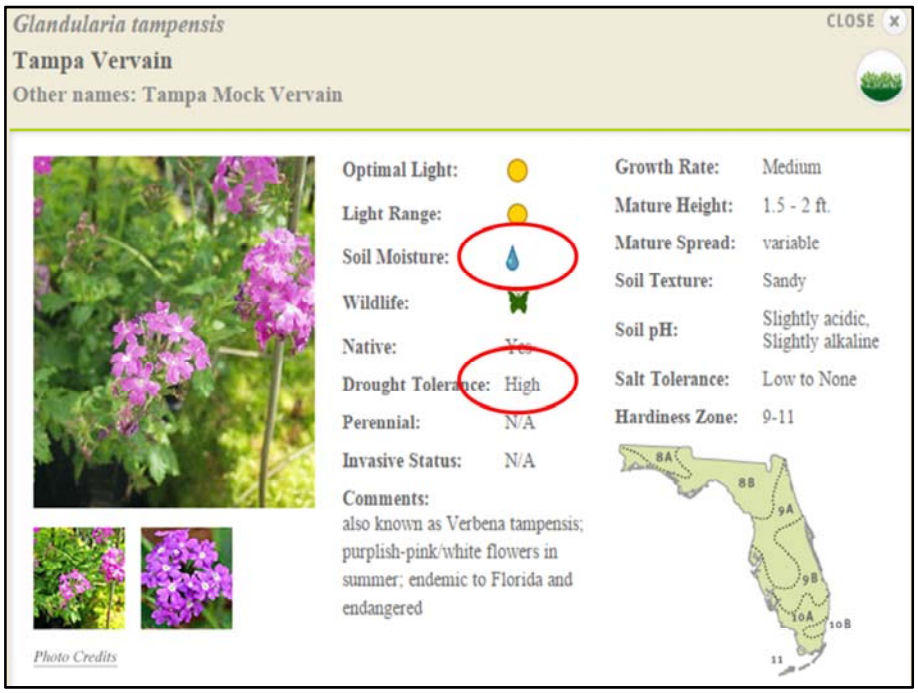
Right Plant, Right Place Exercise

Print these off for each group. I label them as either sandhill, flatwoods or coastal strand. You can choose the habitats that are indigenous to your area. The groups have to use the plant list to pick the plants that would be appropriate for the habitat they are given. I also provide handouts about their specific habitats that includes a description and plants normally found in that habitat. They are allowed to use those plants as well if they are not on the given list.

The plant list was obtained from floridayards.org.



As an example, this is a large tree because the mature height is 60-80 feet. It will tolerate from dry to wet. The drops indicate how much water is needed by the plant. One drop means is likes drier locations, 2 drops needs moderate soil moisture and 3 drops indicates wet soil moisture. This plant has low to no salt tolerance so it should not be planted in a coastal strand situation or anywhere that salt spray or water will be a site condition. Drought tolerance is high indicating it can tolerate dry conditions. I would say flatwoods would be a better fit than sandhill even though it does have high drought tolerance.



This plant would work well in a sandhill habitat. Low soil moisture, high drought tolerance, but no salt tolerance.

In this example we have a small shrub. It prefers a dry soil moisture and has high drought tolerance. It is also very salt tolerant. Light range is from full sun to full shade, but it prefers part sun/shade. This would work in either a coastal strand or sandhill.


Questions?