

Promise to the Wekiva

\$5.00 Suggested
Donation



Journey of a Wild & Scenic River

Dear Neighbor,

As residents of Central Florida we are extremely fortunate to share one of Florida's most treasured ecosystems -- the Wekiva River Basin. The Rotary Club of Seminole County South is committed to the preservation of the Wekiva River and its springs. Those of us who have discovered the beauty of the Wekiva and Rock Springs Run are reminded of the delightful bird songs, cool water, fresh air, amazing scenery, and of course, the fish and wildlife.



Today the river system is in trouble. Excessive nitrates flowing from the springs feed algae that smothers the indigenous eel grass, fertilizes exotic plant species and degrades the river's ecology. Scientists who have studied the river system tell us that spring flow to the Wekiva River is decreasing. Declining water resources also have an adverse affect on the availability of the clean drinking water that we rely upon.

Governments alone cannot protect our water resources. This is why Rotary believes that we all should take part in protecting the Wekiva River and its springs. The Rotary Club of Seminole County South has established the Wekiva River Promise as a community service project.

Through the Wekiva River Promise program, members of our community are encouraged to make five promises to help protect the Wekiva and its springs. The Promise is sealed with a small donation that will be used to fund education, resource management, and restoration projects within the river basin. We ask each of you to promise the following:

1. I will use less fertilizer, no fertilizer or slow release fertilizer on my lawn;
2. I will have my septic tank inspected and pumped every five (5) years;
3. I will plant native or drought tolerant trees, shrubs, and ground cover;
4. I will use pesticides and herbicides only when absolutely necessary; and
5. I will write a letter to my local government official, county commissioner and/or state legislators to let them know I support protecting the Wekiva River Basin.

Through Rotary's Wekiva River Promise program we recognize that water is life. By being mindful of the pollutants generated from our lawns and septic systems, each one of us can do our part to protect the health and quality of our drinking water and the entire Wekiva system.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jim DeKleva'. The signature is stylized with a long horizontal line extending to the left.

Jim DeKleva

Club President 2009-10

Rotary Club of Seminole County South

Contents

- 2 | South Seminole Honors the Wekiva**
The commitment from The Rotary Club of Seminole County South.
- 3 | Modern Stewardship**
The responsibility of taking care of the Wekiva.
- 4 | Wekiva River Aquatic Preserve**
Protecting an exceptional aquatic resource.
- 6 | Wekiva Basin Parks**
All about the parks in the Basin.
- 11 | Drifting through time on Rock Springs Run**
A natural history of Rock Springs Run.
- 12 | Recreation on the Wekiva**
Where to gain access to the Wekiva.
- 16 | Critters of the Wekiva**
Learn more about the birds and turtles of the Wekiva.
- 20 | Map of the Wekiva Basin and Spring Shed**
Where are you on the map?
- 22 | Apopka Blue Sink Expedition**
Discovering how contaminants spread.
- 24 | Water Quality**
What it means to the Wekiva.
- 28 | Florida Yards and Neighborhoods**
Learn more about Florida-friendly landscaping.
- 32 | Fertilizers and Septic Systems**
The effect on the Wekiva.
- 36 | Living the Promise**
How you can help.
- 40 | Contributors**



“As chairman of the Wekiva River Commission, we forged a consensus among many adversarial groups to protect the region’s environment while ensuring its future economic development. Today, the work continues to protect the sensitive natural habitats of the Wekiva River Basin.”

- Senator Lee Constantine

Seminole County South Honors the Wekiva

A Personal Message from Bob Levy

For more than 35 years my family and I have enjoyed the beauty and serenity of this great natural resource. We have also watched the river's struggle to survive the man-made degradation of its pristine qualities. Now it is time to act.

Deborah Shelley, from the Department of Environmental Protection, and Russ Moncrief, a fellow Rotarian who has lived alongside the river for 33 years, introduced the idea of publishing a magazine about the river to the Rotary Club of Seminole County South.

Our environmentally-conscious Rotarians quickly embraced the idea as a community service project and I accepted the chairmanship of the committee. At the time, I had no idea the Promise would be so well-received by everyone who heard the mission statement:

“To increase public awareness of the ecological value of the Wekiva River Basin through the creation and distribution of a full color magazine and encourage personal stewardship through individual promises to protect the Basin.”

With many resourceful and enthusiastic volunteers this is a personally rewarding project.

The amazing articles and photographs in this magazine have been generously donated by many people and they show how much they care about the Wekiva. The authors, photographers, designers, printers and many others who gave their time and talent made the Promise a reality. For this, the river cannot thank them enough.

Donations received from sponsorships, magazine distribution and Promises taken will be used to pay for production of the magazine, for basin improvement projects, and educational projects for local schools.

Many thanks to the Rotary Club of Seminole County South for the continued support of the Wekiva River Promise so our future generations will have the opportunity to enjoy the river like I was able to for many years to come.

I ask you to take the Wekiva Promise as part of your contribution to make this a better place for all.

Would you like to help?

If you would like to assist in protecting the river, send an email to wekivapromise@ssrotary.com

On Modern Stewardship

By Bill Belleville

The earliest humans roamed here thousands of years ago, first as seasonal hunters and later as villagers. They built over two dozen large mounds from shell and sand and bone. They could have lived anywhere on the peninsula, of course. But they chose to live around a river system we know as the Wekiva.

The Creeks who would become the Seminoles later lived on some of the same mounds. They considered the springs holy, a natural cathedral with powers to heal and to restore.

Archaeologists traveling to Florida in the 19th century discovered some of the largest mounds around springs and the rivers they created. One of the most impressive was the five acre “Katie’s Landing” site on the lower Wekiva. Others were around the headwaters at Wekiwa and Rock Springs.

“We’ve had the gift of being allowed to connect with a rare aquatic system, to nurture our own imaginations, to refine and enlarge our senses.”

There were no “laws” to protect such places---except the feelings of sacredness each river dweller carried with them in their hearts.

A true “sense of place” existed, not just in the geography but in how men and women were affected by this unique and singular subtropical terrain.

That sense of place still exists today. It’s revealed in every way the springs and their river are able to touch us moderns----to give us comfort, joy, and solace. And, to enrich and inspire us through direct experience.

Like the river itself, it’s a universal energy that still flows through time, tannic and clear, powerful and sure. It can still illuminate our lives.

You can see that luminous quality on an early river morning---in the golden light on a cypress, in the mist that rises from the water into the cool air, in the bears and deer that scuttle behind the green foliage walls, unseen.

A river like the Wekiva---and its little creeks and tributaries---can still do that because we’ve had the sense to protect so much of it.

But a river is so much more than flowing water. It’s all those diverse natural systems that cradle it, from swamps to scrub, flatwoods to sandhills.

In some essential ways, the “Earth People” who first lived here knew this. So, too, did the modern 20th century hunters and fishermen and philanthropists who made it possible for the core of the Wekiva system to be first protected.

Today, there’s some 110 square miles of land in public ownership in the river basin, making it one of the best preserved rivers in all of Florida. It’s truly a natural jewel in our region.

But, water still flows downhill---whether on the surface or inside the soft porous limestone underneath.

Stewardship today requires a larger context: It’s not enough to simply guard the place where the spring surges out of the rock. Everything uphill---and upstream---from a spring and its river will eventually find its way back downstream.

We’ve had the gift of being allowed to connect with a rare aquatic system, to nurture our own imaginations, to refine and enlarge our senses. The existence of the river has affected our life quality, and that of our families and friends.

The Wekiva doesn’t ask for much in return---only that we acknowledge it, and in doing so, that we respect the natural laws of its geography.

It’s not a negotiable request: We either take responsibility for our own actions and become true river stewards.



Or, we allow this flowing muse of water and animals and myth to become ill, and simply leak away, forever.

It’s not a decision that others who have lived here before us for thousands of years would even question.

Wekiva River Aquatic Preserve

By Deborah Shelley

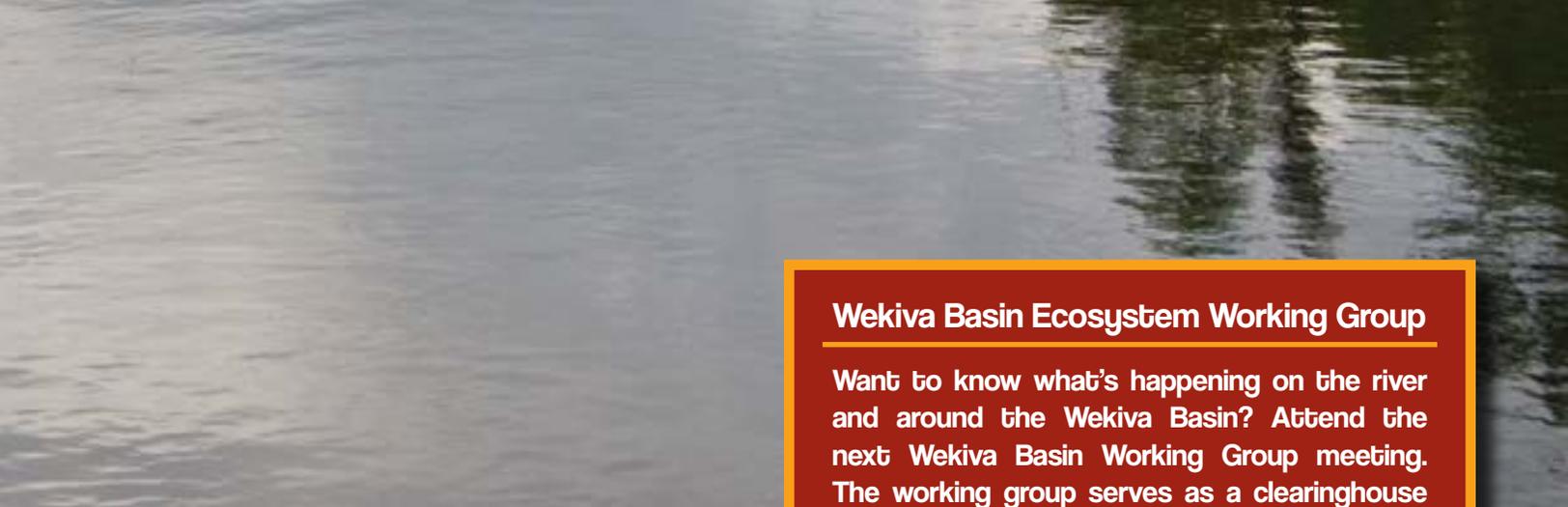
More Than a River...

Did you know that when you step into the cool waters of Wekiwa Springs, you are stepping into an aquatic preserve? Or when you slip into your canoe, dip your paddle, and glide across the water's surface anywhere along the Wekiva River you're moving through an aquatic preserve?

In the 1960's, it became apparent that the beautiful and natural ecosystems that had attracted so many people to Florida could not support rapid growth without science-based resource protection and management. Since then, the Florida legislature has designated 41 exceptional areas as aquatic preserves to ensure that our most popular and ecologically important underwater ecosystems are cared for in perpetuity.

The Wekiva River – Middle St. Johns Aquatic Preserve is one such exceptional place. Wekiwa Spring, at the southern end of the aquatic preserve, is famous for its clear, cool water, enjoyed by swimmers and snorkelers, canoeists and kayakers, who explore the spring run as it flows to the Wekiva River. The Wekiva River begins where Wekiwa Springs Run and Rock Springs Run meet; its fifteen-mile northerly course alternates between wide, sunny stretches of slow-moving water and narrow, shady passages of swiftly-moving current. The Little Wekiva River, Blackwater Creek and more than thirty springs contribute their waters to the Wekiva as it winds its way north.

Florida is fortunate to have 41 aquatic preserves, designated by the state to be maintained and preserved in pristine condition for the enjoyment of present and future generations. These exceptional waters encompass almost four million acres of submerged lands and costal uplands.



When the Wekiva joins the St. Johns River, the character of the aquatic preserve changes noticeably. Everything gets bigger: the waves, the boats, the gators. Though this part of the preserve brushes against civilization, it is actually a twenty-two mile corridor of aquatic beauty that ambles through thousands of acres of swamp, marshland and forest. Flowing water, natural beauty, abundant wildlife and archaeological intrigue all contribute to weave the rich tapestry that is the Wekiva River – Middle St. Johns Aquatic Preserve.

The people who work at the aquatic preserve are involved in a wide range of activities dedicated to improving all parts of this highly connected and interrelated riverine system. These activities include education programs, habitat restoration, wetland bird monitoring, and exotic plant and animal control. We also partner with non-profit groups, schools, and public agencies to promote clean-ups, stormwater projects, and other activities that benefit the watershed.

You can help preserve the beauty, wildlife, and recreation value of the Wekiva River – Middle St. Johns Aquatic Preserve. Take the Wekiva River Promise and make a positive difference!



Learn more about DEP Wekiva River Aquatic Preserve:

dep.state.fl.us/coastal/sites/wekiva

Wekiva Basin Ecosystem Working Group

Want to know what's happening on the river and around the Wekiva Basin? Attend the next Wekiva Basin Working Group meeting. The working group serves as a clearinghouse for information. Learn what researchers are doing in the basin, get updates from resource managers and biologists from Wekiva Basin State Parks, Seminole State Forest, Wekiva River Aquatic Preserve, the St. Johns River Water Management District and local parks.

Become a River Steward!

You can help! The Wekiva-Middle St. Johns Aquatic Preserve is looking for experienced boat drivers and crew members to assist with river patrols, clean-ups, promoting river stewardship and education. Experienced boat drivers must obtain DEP Vessel Operator Certification; no experience necessary for crew. Crew training will be provided.

For more information on the Wekiva Working Group or the River Steward program contact Deborah Shelley at Deborah.Shelley@dep.state.fl.us or call 407-330-6727.

*Support your local
Aquatic Preserve!*

Wekiwa Springs State Park

By Amy Clifton

Take time out from your busy life to enjoy the almost 8,000 acres of Wekiwa Springs State Park, one of Florida's most precious natural resources.

This priceless gem can be appreciated hiking an upland trail or kayaking the cool, clear waters of the river itself or swimming in the bubbling fresh waters at the springhead. Colorful wildflowers, abundant wildlife and beautiful riverscapes await you wherever you go, but aesthetics are not the park's only value.

Give Something Back

- Volunteer to help maintain trails, collect trash, remove exotics. There is always a job that needs doing.
- Don't abandon pets (exotic or domestic) in the park or dump aquarium contents in the river or other waterways - they are all connected.
- Prevent exotic (non-native) plants from taking over natural areas by landscaping your home and/or office with plants native to Central Florida.
- Learn about and replace any practice that leads to groundwater contamination.
- Have your septic system inspected and pumped out at regular intervals.
- Avoid herbicide use.
- Follow outdoor water usage regulations.
- TAKE the WEKIVA RIVER PROMISE!

Park lands and other uplands within the Wekiva River basin act as a sponge, collecting water during rainstorms and filtering it through the basin's sandy soils into the Floridan Aquifer below. Water from the aquifer feeds over thirty springs found throughout the Wekiva Basin, including Wekiwa Springs and Rock Springs, which are the main source of flow to the Wekiva River.

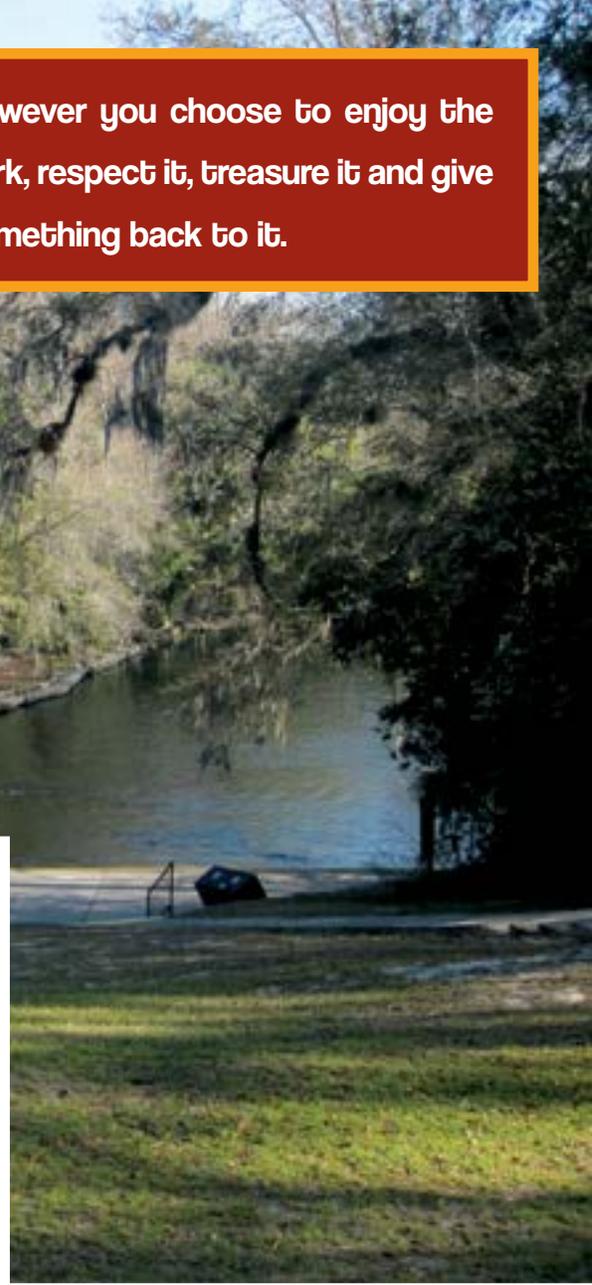
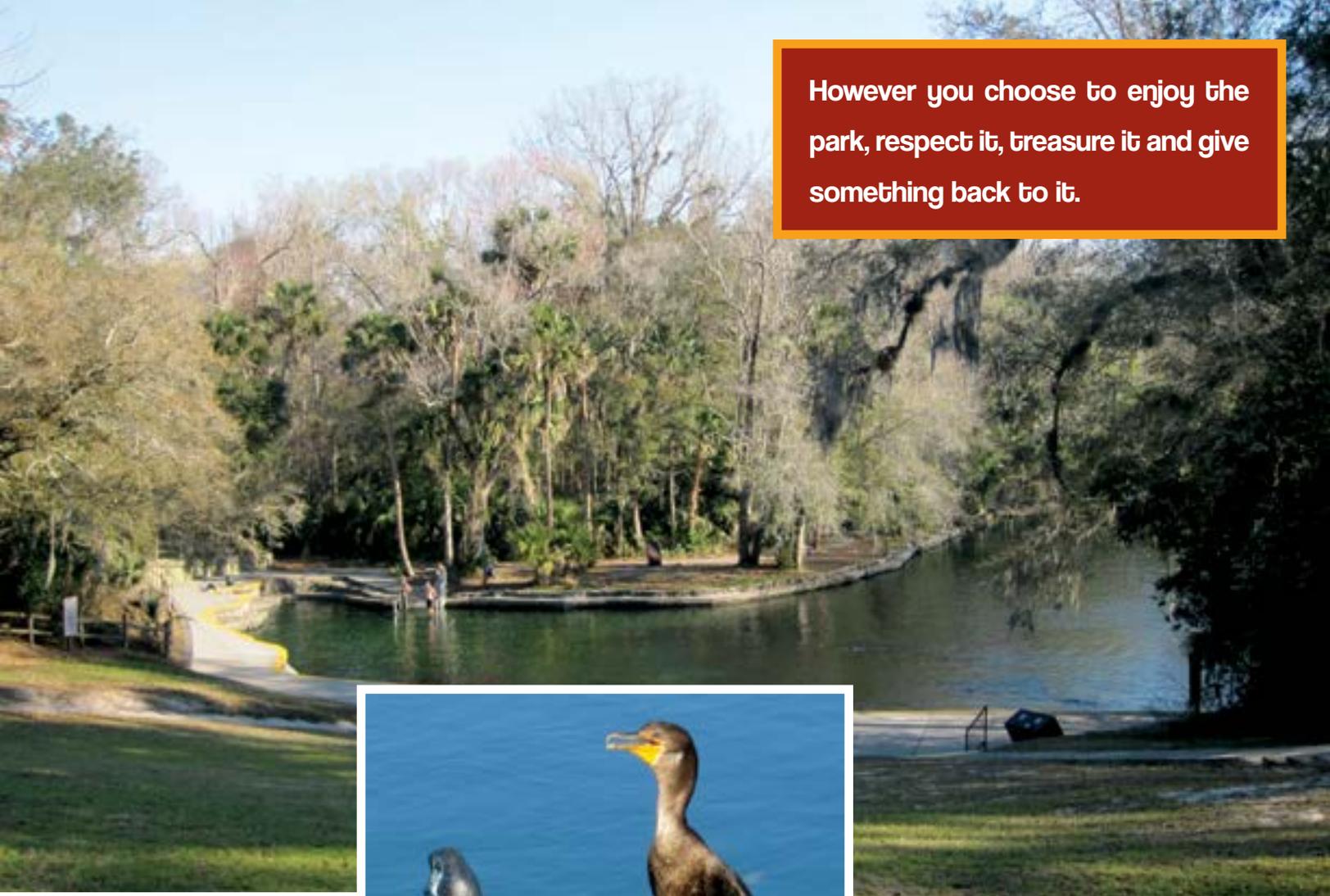
Cultural artifacts within the park provide evidence that humans have lived in the basin for over 10,000 years, reaping the benefits of its natural bounty - fish and game, fruits and berries, snails, fresh drinking water, and natural building materials like sand, clay and shell.

If you meander along one of the park's many hiking trails, you can see how slight changes, of only a few feet, in elevation change the landscape from one natural community type to another. These diverse plant communities support an equally diverse array of wildlife.

A self-guided tour of the park leads you through towering longleaf pine, turkey oak and arching, seed-weighted wiregrass in the sandhills, where you can find deep burrows dug by the industrious gopher tortoise. In the expansive flatwoods, home to the Florida black bear, look for a rufous-sided towhee perched on the fan-shaped frond of a saw palmetto. Watch deer browse in the shady oak hammocks. If you're lucky, you might see a fawn that still has its spots. As you approach the water, you may spot an alligator sunning itself on a log. If you are quiet, you may surprise a secretive black-crowned night heron, or be blasted by the raucous call of a limpkin, wading in the shallows for apple snails.



However you choose to enjoy the park, respect it, treasure it and give something back to it.



Kelly Park

If you are looking for a slice of “old Florida,” try Kelly Park.

Here the crystal clear freshwater of Rock Springs bubbles up from ancient limestone beneath the surface. Spectators watch in awe as nature weaves her spell, unleashing 26,000 gallons of water per minute at a constant temperature of seventy-two degrees. As the water boils up through openings in the bedrock, it courses swiftly around huge boulders. Snorkelers and tubers gather their courage to plunge into the roiling current that gradually tames itself within the reaches of the spring run. Once in, they enjoy a more leisurely ride downstream to the wooden bridge. This is the end of the ride for swimmers, snorkelers and tubers. Beyond the bridge is gator country.

Rich in history, the area around Rock Springs was inhabited by native peoples before Columbus. During the 19th century, it was the site of an early Orange County homestead.

Cotton and sugar cane were raised in the area and the native pines were logged and tapped for turpentine. In 1927, Dr. Howard Kelly, a prominent local surgeon, donated the 245-acre park to Orange County. Since then, it's been a favorite spot for locals and tourists alike.

Kelly Park offers camping, hiking, mountain biking, swimming, snorkeling, and tubing. Tubes are available to rent from private concessionaires just before the park entrance or you can bring your own. For the shallow, sandy-bottomed stretches, where fish and turtles hide in the eel grass, you'll want your mask and snorkel. Florida black bears, white-tailed deer, wild turkey, river otters and dozens of native species make Kelly Park their home. The Bear's Den Environmental Center offers an interesting study of the park's natural history.

Learn more about Kelly Park:

407-889-4179 or visit
orangecountyparks.net
Kelly Park is located at
400 East Rock Springs Rd., Apopka, FL 32712

Wildlife

While in the park, please keep food contained and properly dispose of trash to prevent wildlife from becoming a nuisance.

Park Closings

In spring and summer, Kelly Park often reaches capacity by mid-morning. The park will close and reopen later in the day if capacity allows.

High bacteria levels, attributed to undertermined human and animal sources, in the form of fecal coliforms occasionally result in closure of swimming and tubing areas.

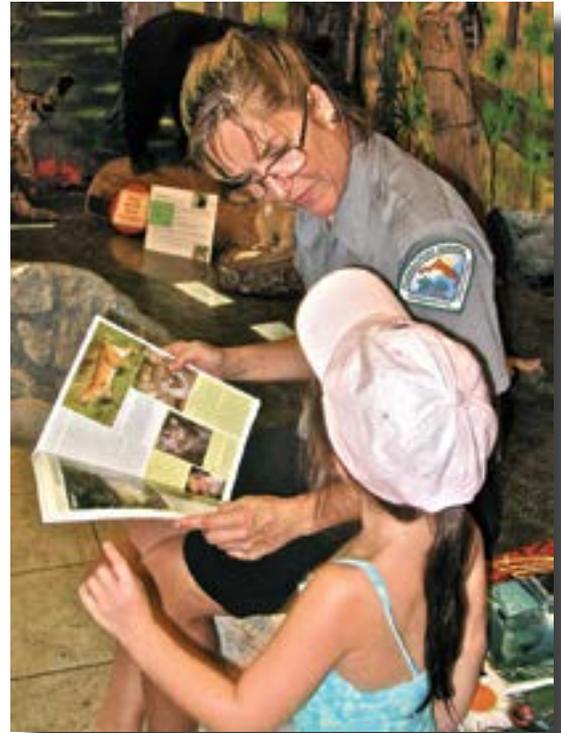
Fun in the Park

A few weeks ago a young girl came rushing into the nature center at Wekiwa Springs State Park clutching something in her fist. Excitedly she opened her hand and asked what it was! It was a stone head of a fishing spear, It was sent to Tallahassee for dating and it turns out the spear head was about 12,000 years old and is on display in the nature center.

It is not unusual for people to bring in objects found near the spring, kicking up sand along the trails can reveal a shark's tooth or seashell. Apart from the pristine beauty of the state park and the Wekiwa River, people forget, in geological terms, this area is still a baby.

This was the last part of North America to rise from the seas. When dinosaurs roamed the rest of the continent, huge sea monsters, like the megalodon, swam in the waters that once covered the Wekiwa River basin. When the waters subsided about 40 million years ago, huge land animals such as mastodons, saber tooth tigers, camels, rhinoceroses, giant ground sloths and thousand-pound armadillos roamed the area.

Today, the park hosts hundreds of thousands of visitors every year and has a diverse resident population of animals and birds. Currently, there are 73 species of plants and animals listed as endangered, threatened or of special concern; an excellent reason why the park and its habitats need to be protected.



Wekiwa Wilderness Trust



Sue Jordan and Don Philpott.

Learn more about Wekiwa Wilderness Trust:

321.277.8442 or visit

wwt-cso.com

Wekiwa Wilderness Trust is located at
1800 Wekiwa Circle, Apopka FL 32712

Standing on the deck outside the nature center at Wekiwa Springs, you enjoy a panorama that has changed little over the centuries. The landscape, vegetation and wildlife are much the same as when the first Indians arrived almost 12,000 years ago and when the first Spanish explorers ventured inland almost 500 years ago.

The nature center is run by volunteers with the Wekiwa Wilderness Trust, which is a non-profit citizen's support organization tasked with protecting the park and promoting educational and environmental issues within the Wekiwa Basin. The nature center shows the history of the area with fossil displays, ancient Indian artifacts, and information on the turpentine industry. You will find animals and birds – some live and some not – showing the wealth of wildlife in the park.

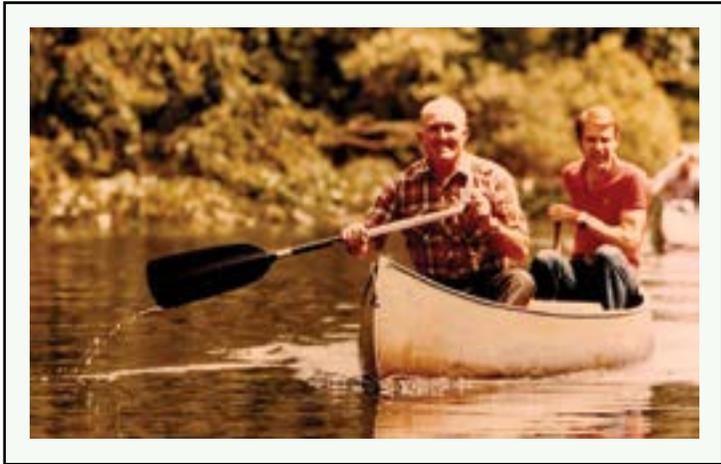
Volunteers also conduct guided nature walks every weekend and a family-friendly event is held every month on the deck outside the nature center. So apart from the springs for swimming and the river for canoeing there is a lot more to see and do at Wekiwa Springs State Park. Come and check us out.

We're looking for a name for our new Mascot!



Drifting Through Time on Rock Springs Run

By Barbara Howell



Gliding silently down Rock Springs Run it's easy to imagine these woods thousands of years ago, when the cypress stump you just floated past was alive; its knees cradling the creek and its giant limbs creating twilight at noon. The mysterious rustling sound around the next bend might be a cave bear or a giant sloth; maybe a miniature horse or a saber tooth cat. The rustling stops abruptly at the first CRACK. You freeze mid-stroke as louder CRACKS and thunderous BOOMS fill the air as the ground shakes. Is it a herd of mastodon crashing through the forest or just a falling tree creating a new clearing?



You paddle on. The narrow run flows quickly out from under the canopy, slows and widens into the flats. The sun is momentarily blinding. You blink and open your eyes to bright blue sky above every shade of green as the dark trees of the forest give way to the lighter greens of the shoreline bushes and the water itself, covered with floating flowers on the surface, eelgrass on the sunlit bottom.

Up ahead is an alligator sunning on the bank. It notices you, slinks quickly into the water and disappears. The sight of this ancient reptile evokes primal instincts of awe, fear and respect. Alligators are still here - virtually unchanged - after millions of years.

Here in the flats, wild rice plumes sway overhead. You imagine collecting it, as the ancient people -the Timucuan- did and wonder: what else did they eat? Nuts and berries? Squash, beans and corn they grew?



Fish and turtles? Deer and alligator? No doubt. But archeologists who have studied their middens think a large portion of their diet was a tiny snail.

You start to wonder who collected all those snails and why are those snails no longer in abundance. Did something about their environment change? Thinking about the work involved collecting the snails, you smile wondering if the Timucuan had fun swinging from vines into the river?

Your muse is interrupted as you drift past a sign for a modern day campsite on a Timucuan mound. How quickly things changed for the Timucuan's during the 1500's when European explorers "discovered" this area. In less than 200 years, the Timucuan people were gone. Most were killed by wars, disease and slave labor; others were driven away and assimilated into other tribes. All that remains of their culture are accounts written by various European explorers and settlers, and the Timucuan middens and burial mounds, many of which have been ransacked by people who did not care or realize the historic and moral value of keeping them intact. Due to their high shell content, many middens and burial mounds were used to make roads.

La Florida changed hands numerous times in the subsequent centuries. As roads and railroads made the area more accessible, towns sprang up and the Wekiva basin was logged, farmed, ranched and hunted. Pines were tapped for turpentine, as was the seemingly inexhaustible aquifer for irrigation. The springs were used for wine making and recreation, and the river for transportation.

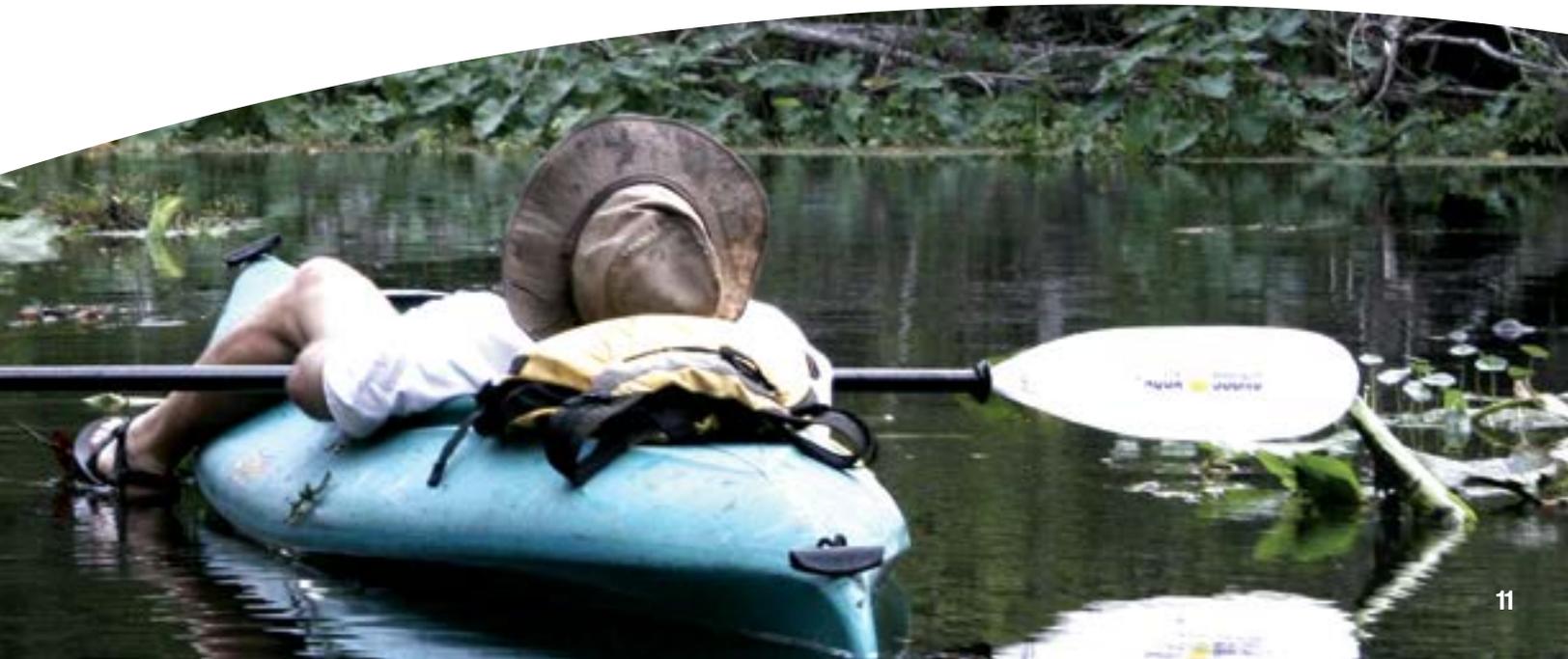
Tourists traveled by paddle boat all the way up the Wekiva River from the St. Johns to visit the springs. Some came to fish or hunt and camped out at the sites you are floating by now. The Apopka Sportsman Club was last group to privately own these woods. In 1969, its members

"Your muse is interrupted as you drift past a sign for a modern day campsite on a Timucuan mound."

continued the formal conservation of the Wekiva basin, begun by Dr. Howard A. Kelly in 1927, and they sold what is now Wekiwa Springs State Park to the state. Since then, more than 70,000 acres has been purchased to preserve the wildness of the Wekiva to create a true greenway from the springs to the Ocala National Forest.

Continuing lazily downstream, Rock Springs Run meets Wekiwa Springs Run, together they become the Wekiva River. Soon you approach the Bridge to Nowhere, our local testament to change. While land acquisition is a very important piece of the preservation puzzle, our river doesn't live happily ever after because adjoining lands are in public hands. Many of the pieces lie in private hands, our hands.

As you paddle on, you see how carelessness causes pockets of floating litter, bottles and cans in the river, and fishing line tangled in branches. You notice algae growing on the eelgrass and strange-looking catfish. These are the obvious and visible symptoms of a natural system in trouble. Not obvious are the myriad chemicals, nutrients and bacteria from road runoff, septic systems, agriculture, lawns and golf courses that adversely affect the river's health and viability. Not visible are the native species that no longer exist due to a reduction in spring flow, changes in water chemistry or exotic species that took over their niche. You wonder, "What can I do to help?"



River Access Points



1 King's Landing

Canoe rentals for Rock Springs Run. Rental includes pick up at Wekiiva Island & return to Kings Landing. 407-886-0859. Restrooms, bird watching.

2 Wekiiva Springs State Park

Entrance fee. Canoe and kayak rentals contact Nature Adventures 407-884-4311. For camping permits contact WSSP Ranger Station 407-884-2008. Restrooms, wheelchair access, food, drinks, swimming, picnic areas, camping area, cabins, bird watching.

3 Wekiiva Island

Canoe, kayak and small paddle wheel boat rentals 407-862-1500. Restrooms, wheelchair access, snacks, drinks, picnic area, cabana rentals, bird watching.

4 Wekiiva Falls Resort

Entrance fee. Canoe & kayak rentals, pontoon boat tours by reservation 888-4WEKIVA or 352-383-8055. Restrooms, wheelchair access, food, drinks, picnic area, year-round RV camping, seasonal tent camping, bird watching.

5 Wilson's Landing

Free public access. 407-665-2001. Restrooms, bird watching, covered picnic tables, canoe launch.

6 Katie's Landing

Entrance fee/honor box. 407-884-2008. Restrooms, bird watching, picnic tables, canoe launch.

7 Highbanks Marina

Free public access. 386-668-4491. Restrooms, store, wheelchair access, food, drinks, bird watching.

Litter

Year after year, volunteers fish trash out of the Wekiva River and its tributaries. Where does it all come from?

Ironically, the litter problem is worse in “civilized” areas. The Wekiva River receives hundreds of pounds of trash every year from roads, parking lots, yards and storm water retention ponds.

In the wilderness areas, litter comes from two main sources: accidents and laziness. Accidental litter is easy to spot: a flip-flop here, one farther downstream, unopened water bottles and soda cans, sunglasses and soggy sandwiches. Obviously, someone’s canoe tipped over and all their stuff didn’t make it back into the boat.

Laziness can be identified by carelessness dropping of debris and litter because it’s too burdensome to carry.

Monofilament Fishing Line

Fishing line is very dangerous to our wildlife along the Wekiva River. Any person who fishes understands how easy it is to get your line caught in trees or get tangled in the brush.



Litter Hurts

Birds, turtles, ducks and other critters have been harmed by litter left behind. A beak tied shut by fishing line or getting stuck in a bottle and ingesting a plastic bag is hazardous and these critters don't have the ability to help themselves.



Pitch In

If you see litter, you can help by picking it up! Avoid creating litter by bringing a small bag to hold your trash, then toss the bag into a proper receptacle.

Join us for a river clean up. There are several clean ups held throughout the year. Plan to attend and help keep the Wekiva River an Amazing Outstanding Waterway!



Scarlet milkweed



Bottlebrush



Passion flower



Oakleaf hydrangea

Online database makes it easy to plant a water-conserving landscape

By Teresa Monson

With more and more people looking for information online, the St. Johns River Water Management District has updated and expanded its waterwise plant database to be a dynamic, web-based search tool to help landscapers and do-it-yourselfers identify the right plants for their yard's specific growing conditions.

The District's waterwise landscaping web pages provide information on how to design a water-conserving landscape and how to group plants according to their needs, such as sunlight and soil conditions.

"The District's waterwise plant database is designed to help determine which plants are most appropriate for a landscape, given the natural growing conditions found there," says Deirdre Irwin, the District's Florida Water StarSM coordinator, who led the development of the new waterwise database. "The plant details can help you select the optimal location for the plant, where it would need minimal irrigation to thrive. You can choose the options that suit your needs, and a spreadsheet can be generated with plants meeting your criteria that can then be taken to a nursery or garden center."

"Gardening just got easier with the help of the District's waterwise landscape database," says Tom MacCubbin, extension agent emeritus with the University of Florida Institute of Food and Agricultural Sciences and host of "Better Lawns & Gardens Radio."

"Gardeners can pick the right trees, shrubs, flowers and more for the right places," MacCubbin says. "The database is easy to use and contains the waterwise plants we need to be planting in Florida. The database also provides plant care information needed to grow a healthy, waterwise landscape."

The online database offers a greater number of species for each category than the previously printed "Waterwise Florida Landscapes" book and its online version. The earlier version listed 556 plant species, while the new database has approximately 800 species with no duplication. Each plant is listed in the database just once. The category in which a plant is placed is determined on the plant's mature size, its maintenance

requirements, and whether the plant naturally is best suited for dry or wet soil conditions.

The database is searchable by 12 characteristics including: scientific name, common name, size, flower color, hardiness zone, soil moisture needs, light and shade requirements, salt tolerance and more. The database also allows users to compare information about different plants to determine suitability for planting as a group and to help the user better plan a water-conserving landscape.

“We are trying to encourage the planting of appropriately sized species,” Irwin says. “A plant’s mature width is important because a plant that’s crowded too tightly becomes needy.”

“Gardening just got easier with the help of the District’s waterwise landscape database.”

**Tom MacCubbin,
extension agent emeritus
with the University of Florida IFAS
and host of “Better Lawns & Gardens Radio.”**

Irwin says the interactive tool is more up to date, is easy to use and can be just as portable as the traditional waterwise book, which has been discontinued in its printed format.

Landscape irrigation is often the biggest use of water at home. If a landscape’s sunlight and soil conditions are assessed correctly, well-chosen plants will need little to no supplemental irrigation once established.

“Waterwise is a common sense way to landscape that conserves water and protects the environment,” Irwin says. “The main objective is to establish and maintain a healthy landscape by matching the right plants with existing site conditions so that the use of additional resources — such as water, fertilizer, pesticides and labor — is minimized.”

The waterwise database, found online at floridaswater.com/waterwiselandscapes, was launched in October and quickly received positive reviews from landscape professionals interested in environmentally friendly practices. Much of the research was performed by Teresa Watkins of Orlando, a Florida Water StarSM certifier, who also serves on the U.S. Green Building Council’s Sustainable Sites Technical Advisory Group.

Common name	Scientific name	Plant category	Hardiness range	Soil moisture range	Light range	Growth rate
Abutilon, flowering maple, Chinese lantern, Chinese bell flower	Abutilon x hybridum	Shrub + 10 ft	9b - 11	Moist	Full sun - partial sun	Moderate
Adiantum, maidenhair fern, blue maidenhair	Nerve Plant	Shrub + 10 ft	9 - 10b	Dry - moist	Full sun	Slow
Aloe	Aloe vera	Shrub + 10 ft	9b - 11	Dry	Full sun - partial sun	Slow
Alocasia, elephant ear, Philodendron, arrow plant	Alocasia x alocasia Poly	Shrub + 10 ft	10a - 11	Moist	Shade	Slow
Azalea, spiral Azalea plant, Japanese azalea	Azalea Japanese	Shrub + 10 ft	9 - 10b	Moist	Full sun - partial sun	Slow
Baker's breath fern	Banksia thuringii	Shrub + 10 ft	4 - 9b	Dry	Full sun - partial sun	Moderate
Bahama hibiscus	Cassia bahamensis	Shrub + 10 ft	9b - 11	Dry - moist	Full sun	Fast
Basil, sweet basil, common basil, holy basil	Herbaceous	Shrub + 10 ft	7 - 10b	Dry - moist	Partial sun - shade	Fast
Beachberry	Calceoge americana	Shrub + 10 ft	9 - 11	Moist	Full sun - partial sun	Moderate
Bignonia, trumpet vine	Synce paniculata	Shrub + 10 ft	9 - 10	Moist	Full sun - shade	Slow
Blue butterfly bush, blue glorybush	Shrub + 10 ft	9b - 11	Moist	Partial sun	Fast	
Blue ginger	Dehneria lynchii	Shrub + 10 ft	9a - 11	Moist - wet	Shade	Moderate
Blue lantana	Daylissia involucrata	Shrub + 10 ft	9 - 9b	Moist	Shade - partial sun	Slow

Common name:

Scientific name: Sounds like

Plant type: Sounds like

Hardiness zone (e.g. 7a, 9b etc.):

Mature height in feet: Like that / equal to

Flower color:

Soil moisture:

pH:

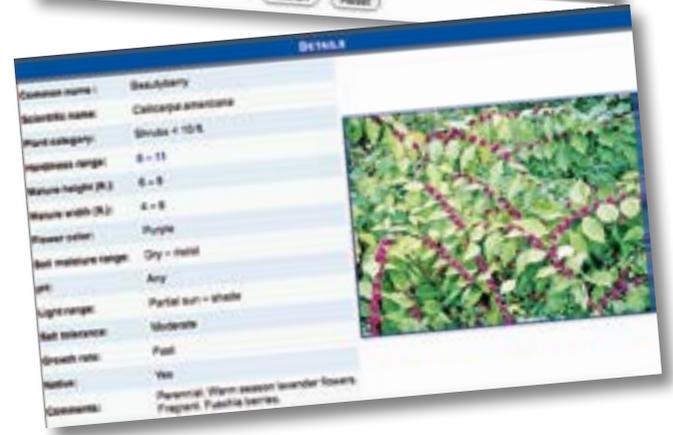
Light range:

Salt tolerance:

Growth rate:

Native:

No. of results per page:



“If you choose right plants for the natural conditions of your landscape and put them in the right place, you should be able to reduce your irrigation, perhaps turn off your irrigation system, which can save a lot of money with rising water rates,” Irwin says. “As soon as a plant is put in the wrong place, it becomes a needy plant, usually resulting in more water waste.”

floridaswater.com/waterwiselandscapes

On Feathered Wing

By Lorne Malo

Birds are among the most conspicuous animals in nature.

An ecosystem's health is measured by the numbers and kinds of animals it supports. The 170 species of birds identified to date in the Wekiva River Aquatic Preserve are an excellent measure of the health of the river.

Landforms such as coastlines, rivers and mountain ranges are used as a road map for migrating birds to reach their wintering and breeding destinations. The north-south orientation of the Wekiva River likely aids some birds in their movements through this portion of central Florida.

Many birds live year round throughout the Wekiva area, such as eastern screech-owl, barred owl, great horned owl, brown-headed nuthatch, and Carolina wren.

Other birds that are permanent residents in the Wekiva Basin are migratory in the northern portion of their ranges. Some examples of these include pied-billed grebe, white ibis, bald eagle, red-shouldered hawk, red-tailed hawk, northern flicker, eastern bluebird, and pine warbler.

Other species found in the Wekiva Basin only as winter residents include American robin, tree swallow, gray catbird, yellow-rumped warbler, and palm warbler.

Still other bird species are found only as transients in the spring and/or fall. Some examples of these include broad-winged hawk, veery, wood thrush, black-throated blue warbler, hooded warbler, Kentucky warbler, and Louisiana waterthrush.

Large undisturbed tracts of land are essential for maintaining large populations of many species of birds. Many require large home ranges to find sufficient food to sustain breeding adults and their young. Some examples include swallow-tailed kite, short-tailed hawk, yellow-billed cuckoo, hairy woodpecker, and Florida scrub jay.

The Wekiva Basin is rich with birds. Kayaking is the best way to search the river and its tributaries and the avid bird paddler will be rewarded with new finds and behaviors, witnessed in good weather or bad, on hot days or cold.

White Ibis (*Eudocimus albus*) - the most commonly found wading bird on the Wekiva River. The immature are brown with white backs and undersides. Despite its common occurrence, the white ibis population statewide has declined by over 95 percent and are listed as a species of special concern in Florida.

Limpkin (*Aramus guarauna*) - a fairly common inhabitant of the Wekiva River, is a medium-sized brown wading bird with white spotting and a long, slightly down-curved bill. Its specialized diet includes apple snails (*Pomacea palludosa*) and freshwater mussels, along with aquatic insects and small amphibians. Named for its awkward "limping" gait, the secretive limpkin is most easily found by their piercing, raucous calls. Historically, limpkins were hunted heavily and their numbers have not recovered. Today, they are listed as a species of special concern in Florida. Surveys indicate that the local Wekiva population appears stable with forty or more birds.

Swallow-tailed Kite (*Elanoides forficatus*) - perhaps the most beautiful and graceful of raptors found on the Wekiva River, their black and white color and deeply forked tails are unmistakable markers. Swallow-tailed kites arrive in Florida from Central and South America, in February and March of each year, to nest in tall pines and cypress trees near the river, where they glean their prey. By July, the swallow-tailed kites have formed large communal roosts to upwards of 50 birds and depart in August and September.

Sandhill Crane (*Grus canadensis*) - the largest of the long-legged wading birds, two subspecies are found on the Wekiva River. The Florida sandhill crane lives year-round on the Wekiva while the Mississippian sandhill crane is migratory. Their red crown patches and distinctive call make them easy to spot. They feed in marshes and grasslands on insects, fish, amphibians, and small birds and mammals. Loss and degradation of habitat resulted in a decline in population, listing them a threatened subspecies in Florida.

Little Blue Heron (*Egretta caerulea*) - the most common heron or egret found on the Wekiva River. First year birds are all white and look similar to other comparable sized egrets, such as the snowy egret and cattle egret. By first spring the little blue heron begins to acquire some of its blue-gray coloring and is pied overall for most of that year. It turns fully blue-gray by the second spring. The little blue heron stalks its prey in shallow water or floating vegetation, eating small fish, frogs, crayfish, and insects.

Wood Duck (*Aix sponsa*) - the most common duck found on the Wekiva River. The adult male has a colorful contrasting color (pied) facial pattern and plume. The female's color is drabber, with a white tear-shaped pattern around the eye. A year-round resident, the wood duck nests in natural tree cavities or in man-made cavity boxes near water, raising two broods each year. Wood ducks eat a variety of seeds, including acorns, as well as insects and crustaceans.

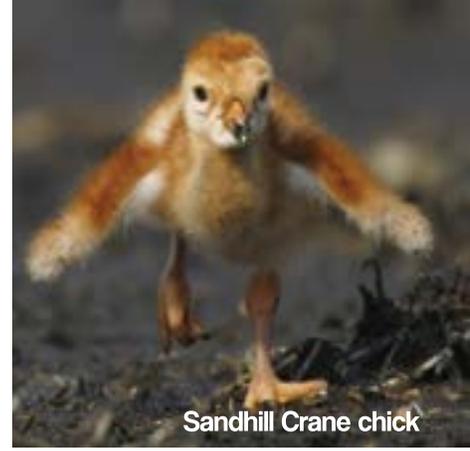
Wood Stork (*Mycteria americana*) - a large uncommon wading bird sometimes seen on the Wekiva River. This white and black bird feeds by moving slowly through shallow water and eats a variety of fish, crayfish, snakes, frogs and hatchling alligators. The Wood Stork's highly sensitive bill snaps shut with lightning speed when it meets potential prey. Wood Storks are very susceptible to water level manipulation and excessive rainfall, especially during the nesting season, when Wood Storks have to find additional food for their young. The Wood Stork was formerly one of the most abundant wading birds in Florida, but the alteration of wetland hydroperiods and loss of habitat led to a sharp decline in population. The Wood Stork is an endangered species in Florida and throughout the United States.



Limpkin



Wood Duck



Sandhill Crane chick



Swallow-tail Kite



Juvenile Little Blue Heron



White Ibis



Sandhill Crane



Wood Stork

Freshwater Turtles in the Wekiwa Basin

By Marsha Butler

One of the delights of a trip down the Wekiwa River is the wildlife viewing. Chief among the critters you can count on seeing on the river are freshwater turtles.

Look for them sunning themselves on downed trees, half buried in the dark water or swimming beneath the surface; sometimes you'll spot only a head sticking out of the water. On a log or tree branch, extending out from the shady bank, you're likely to find a lone turtle or sometimes a "herd" of turtles, sunning themselves, legs splayed out and necks extended. They are not just sunning themselves for fun. A turtle's shell is its primary defense against predators. The sun's UV rays help turtles photosynthesize Vitamin D to regulate the balance of calcium and phosphorus that keeps their shells hard and their bones strong. A turtle's shell warms up more slowly than body tissue, so the turtle extends its neck and legs to absorb heat more rapidly and speed up the warming process. Keep your distance and don't disturb sunning turtles - they need their rays.

In 1999, the Central Florida Freshwater Turtle Research group, under the direction of Dr. Bryan Hauge of Penn State University, began a turtle population study at Wekiwa Springs. Today, principal investigator, Eric Munscher, continues that study at Wekiwa and other nearby springs. In the last ten years this volunteer group of professional biologists, graduate students and undergrads have captured, sampled and released over 5,000 turtles in the Wekiwa. Population data indicate that the Peninsula Cooter and the Red-bellied Cooter are the most common native

freshwater species caught by the researchers. The Loggerhead Musk, Common Musk, Florida Softshell, Florida Snapping, and Florida Chicken turtles are also included in the survey.

Your best chance of spotting a Loggerhead Musk or a Common Musk, as known as a stinkpot, turtle is while you are swimming or snorkeling, they stay near the bottom where they feed on submerged vegetation. Florida Softshell turtles "sun" themselves by floating lazily in the water with much of the top of their shell, known as the carapace, out of the water, exposed to the sun. They are rarely observed sunning on land. The Florida Snapping turtle, an ambush predator, is most likely to be found along river banks where the vegetation is thick where it conceals itself from its prey. Occasionally, you might spot one as it cross the river. All species of turtles have powerful jaws, but be particularly wary of this fellow's. Florida Chicken turtles like water with little to no flow, like Sand Lake at Wekiwa Springs State Park, but they do make their way into the spring run occasionally.



Florida Softshell



Loggerhead Musk



Florida Chicken turtle



Florida Snapping turtle

Did You Know?

- Red-bellied turtles will lay eggs in alligator nests.
- Turtle eggs hatch in 60-90 days.
- Young turtles tend to be omnivores; adult turtles - herbivores. Red-bellied turtles are the exception. They seem to stay omnivorous for life.
- The sex of a turtle (like an alligator) is determined by the place of its egg in the nest. The hotter spots of the nest produce males; the cooler spots, females.
- Turtles spend one-third to one-half of each day sunning themselves.



Red-eared Slider

Also found in the Wekiwa is an exotic (non-native) turtle, the Red-eared Slider, whose distinctive red ear stripe differentiates it from the Peninsula Cooter.

The Red-eared Slider, commonly known as the "pet store" turtle, was most likely introduced by owners disposing of them in the river. Exotic species disturb the natural balance of an ecosystem, often introducing parasites and disease, and compete with native species for food and habitat.

The turtles you see sunning on a log are most likely either Peninsula Cooters, Red-bellied Cooters or a mixture of the two. From your perspective, these sunning turtles may all appear to have yellow bellies and it is easy to assume they are all Yellow-bellied Sliders, but those turtles reside in North Florida. So, can we rule them out completely? Not really. Munscher has caught two of them during sampling surveys and found recorded evidence of Yellow-bellied Sliders in Orange, Seminole and Volusia counties. However, the most likely two contenders of Wekiva turtles sporting some shade of yellow belly are either the Peninsula Cooter or Red-bellied Cooter.



Red-bellied Cooter



Peninsula Cooter

Is a Red-bellied Cooter readily identifiable by its red belly? No. Red-bellied Cooters can have yellow bellies, orange bellies and, yes, occasionally, they have red bellies. But the Peninsula Cooter's range of belly colors is roughly the same as the Red-bellied. So, how can you tell which it is? In order to determine what species of turtle you are viewing, you need to look at something besides their bellies - like their shells, for instance. It is sometimes difficult to see the detail of their shells as they are often covered with green moss or algae.



What kind of turtle is it?

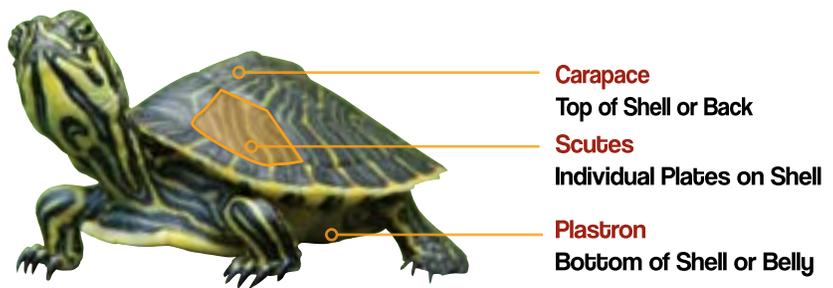
By Graham Williams



What kind of turtle am I?



How can you tell?

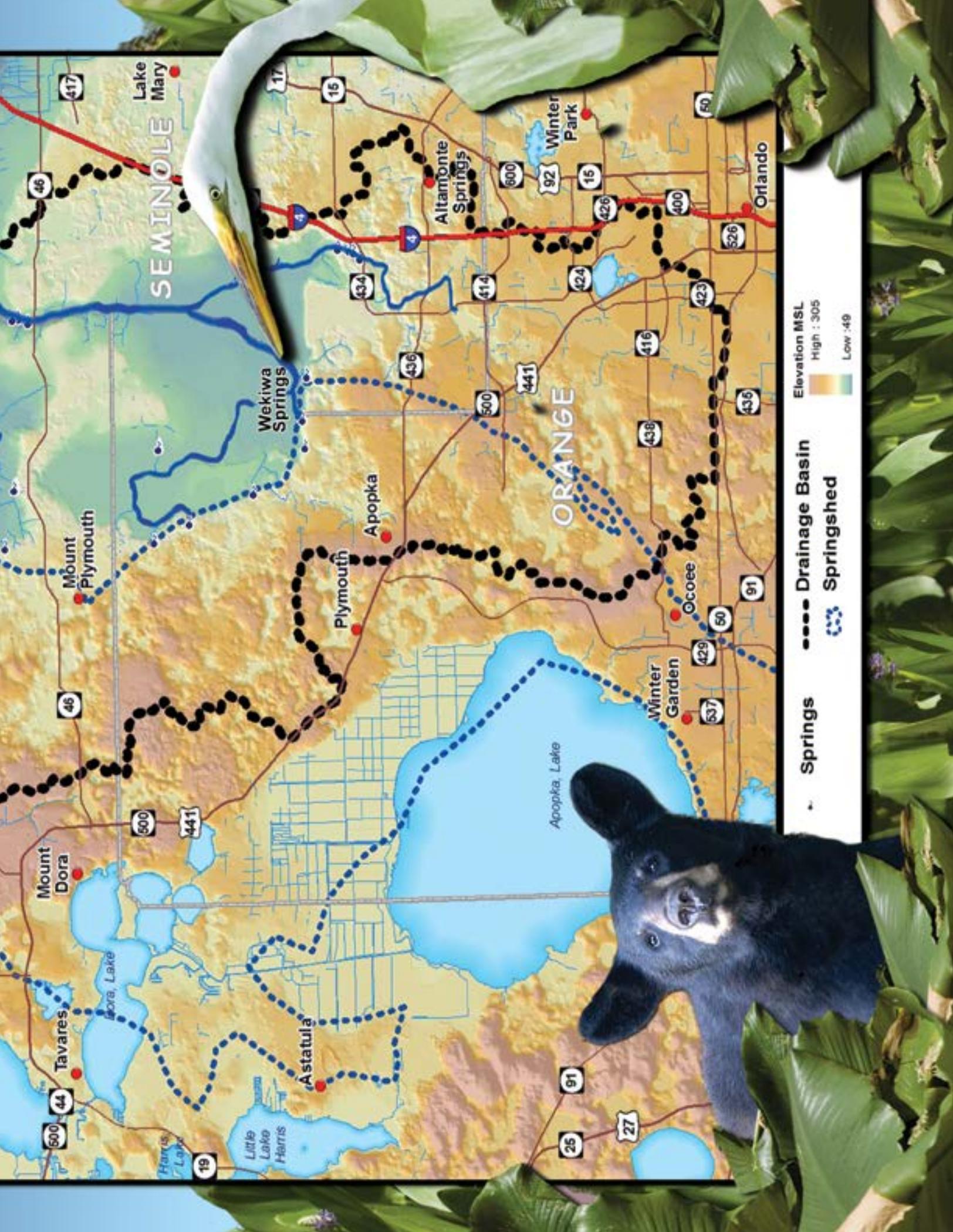


Peninsula Cooter	Red-bellied Cooter
Plastron - yellow to orange	Plastron - yellow to orange to red
Carapace - usually dark with parallel yellow lines on the scutes extending out to the edge	Carapace - one large, dark red band across each scute
Head & Neck - hairpin-shaped yellow markings	Head & Neck - yellow stripes but not hairpin-shaped

Wekiva River Basin ^{and} Springshed

Surface waters in the Wekiva Basin cover 380 square miles.
The Wekiva Springshed covers approximately 238 square miles.
Do you live in the Basin, in the Springshed or both?





SEMINOLE

ORANGE

Orlando

Lake Mary

Altamonte Springs

Winter Park

Wekiwa Springs

Apopka

Plymouth

Mount Plymouth

Mount Dora

Tavares

Astatula

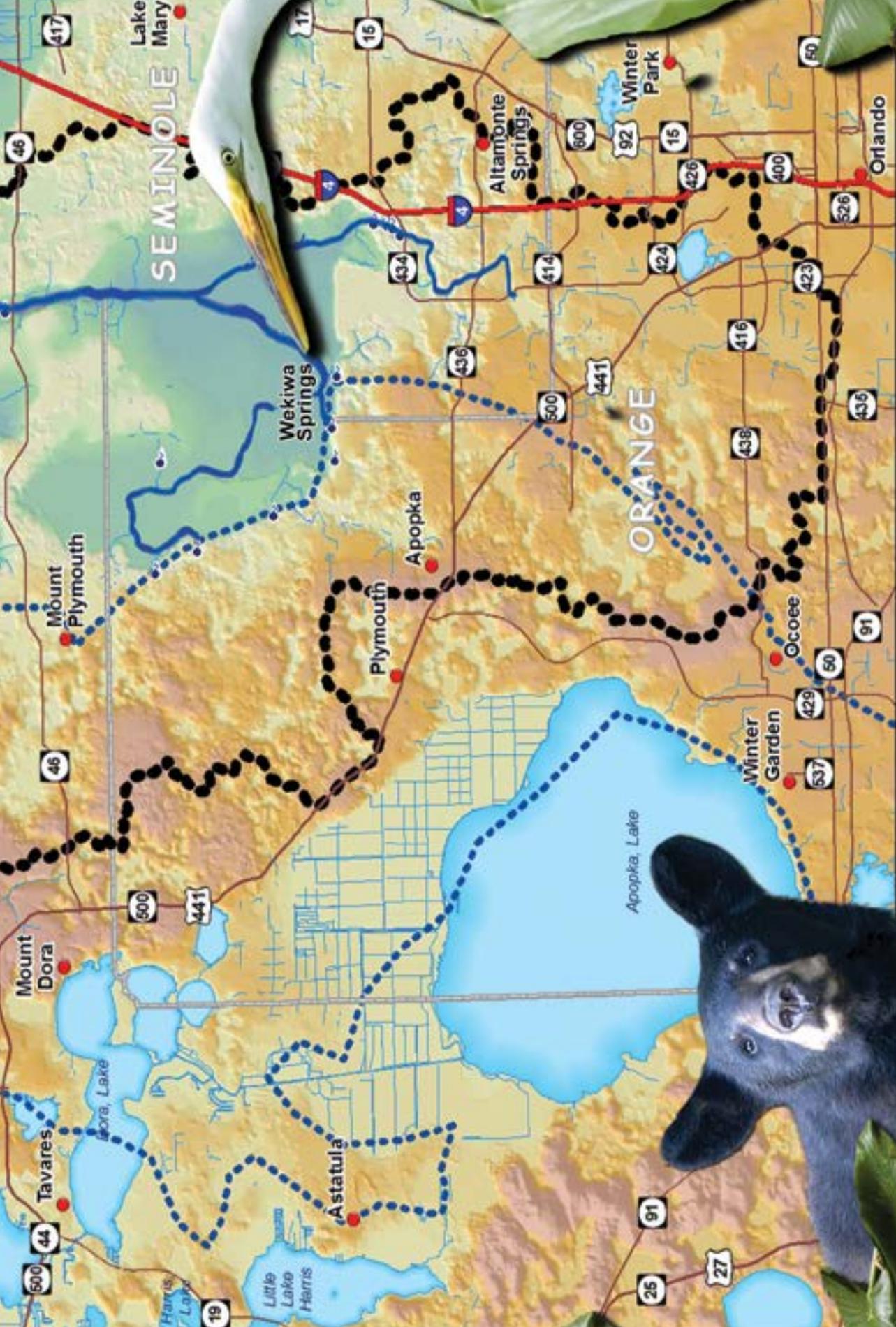
Winter Garden

Apopka, Lake

Little Lake Harris



- Springs
- Drainage Basin
- Springshed



Window into our Aquifer

By Amy L. Giannotti

Apopka Blue Sink Expedition

In 2001, at the request of the City of Apopka, the Cambrian Foundation's dive team removed eleven pickup-truck loads of trash, including a burned sofa, Christmas trees, a car engine block, bottles, fencing, tires and plastic, from the bottom of a local sinkhole – Apopka Blue Sink.

A sinkhole is a depression or “hole” created when underground water, caught in a pocket of limestone below the surface, drains out of that pocket. Without the pressure of the water to support the land above, the pocket crumbles and the ground sinks, creating a sinkhole. Sometimes, as with Apopka Blue Sink, a sinkhole is actually a window into the aquifer, a place where the aquifer is directly exposed to the surface. Rather than seeing this window as an opening where the ground water below is vulnerable and needs to be protected from contamination and pollution, many people view sinkholes as a dumping ground. Unfortunately, these dumping grounds are directly connected to the source of drinking water for ninety percent of Florida's population and home to some of the most diverse aquatic species in the nation.

The Cambrian Foundation returned in 2003 for a joint cleanup with local Girl Scouts. In addition to the pride of community service for their part in



the cleanup, the Girl Scouts also learned that maintaining the underwater environments free of litter and pollutants from the surface is critical to the success of the rare species that rely on these habitats for survival.

It was also believed the sink---which is about a mile upland from Rock Springs---might also link directly to that spring. In fact, the City of Apopka had initially purchased the land immediately around the sink in order to keep it free of trash and other pollution that might find its way into the aquifer.

Karst Environmental Services, diving scientists who routinely use underground dye testing in Florida, were initially consulted. Karst donated a portion of a colorful dye to use, but a more reliable test required the purchase of a colorless eosine dye. The Friends of the Wekiva River, concerned about growing development in the recharge area for the major springs of the Wekiva, then donated money to purchase the eosine dye.

Biodegradable dyes are often used to trace the flow of water in karst limestone systems and through areas of caves or springs that are too narrow for divers to navigate. Once released, the dye mixes with the water and travels the same path that the water is flowing. Water samples are collected downstream and analyzed in a laboratory using a spectrofluoro-photometer . This instrument calculates the concentration of dye in the sample, proving where it came from and how long it took to get there.

A test in which Cambrian divers released the eosine dye inside Apopka Blue Sink did confirm the sink was directly linked to Rock Springs.

The dye trace proved the hydrologic connection between Apopka Blue Sink and Kelly Park and illustrated that the watershed for Rock Springs is much larger than previously believed. It also demonstrated how quickly pollutants can enter and move through our water systems.

Karst Formations

Karst is a specific type of terrain formed by dissolving limestone, dolomite and/or gypsum. Carbon dioxide (CO₂) from the atmosphere and soil mixes with water (H₂O) and creates a weak solution of carbonic acid (H₂CO₃). This acid dissolves the bedrock, forming small passages, conduits and other unique openings. Over time, rainwater enlarges these openings until an extensive network of subterranean passages exists.

What You Need to Know About the Apopka Blue Sink

The Apopka Blue Sink is less than a mile west of Rock Springs in Kelly Park.

The dye trace proved that Apopka Blue Sink is connected underground to Rock Springs.

Rock Springs is closed several times a year due to bacterial contamination.

Area residents with wells draw their drinking water from the same underground river of water that flows from Apopka Blue Sink to Rock Springs and what goes into Apopka Blue Sink goes into their drinking water.



(From top to bottom) Diver in cave, Apopka Blue Sink.

During the dye trace, the Girl Scouts above ground could communicate with the divers underwater. Using the Human ROV© (Human Remotely Operated Vehicle), the Girl Scouts were able to see what the divers were seeing and ask them questions as they swam through the limestone labyrinth.

The group saw the unique geology underlying the forest terrain above and the delicate creatures that live in that fragile environment and how our actions directly affect our environment, in general, and, in particular, our drinking water resources.

The dye moves downstream demonstrating how quickly pollutants enter and move through our water system.



The Cambrian Foundation's use of the Human-ROV© allows students to tour the underwater world with the divers and learn about the biology, geology, hydrology, and ecology of these incredibly unique, diverse, and remote ecosystems. Being able to 'tour' ecosystems enables participants to understand how groundwater is connected to springs, witness the diversity of life supported, and interact live with researchers in the submerged caves.

Learn more about the Cambrian Foundation:
cambrianfoundation.org

Nutrients in the Wekiva River System

By Rob Mattson

Nitrogen (N) and phosphorus (P) are naturally occurring chemicals, essential for the support of plant and animal life in spring run stream ecosystems such as the Wekiva River.

These two major nutrients appear as dissolved solids and are naturally present in very small amounts, typically less than 0.05 ppm (parts per million) nitrate (N) and 0.04 ppm total phosphorus (P).

Human activities, such as fertilizer use on farms, lawns, and golf courses, can introduce excess N and P to surface waters via direct runoff and to groundwater by recharge through sandy soils into the aquifer that feeds the Wekiva River system springs. Water quality data show that nitrate levels in several springs feeding the Wekiva River system (particularly Rock and Wekiva Springs) have increased considerably over the past few decades, from about 0.05 ppm in the early 1900's to as high as 2.0 ppm in the 1990's. Nitrate levels have declined since then, to around 0.9 ppm in Wekiva and 1 ppm in Rock Springs, but these levels are still well above the natural background. Other nitrate sources, include wastewater from spray fields and septic tank drain fields. Total phosphorus levels are also higher than expected (0.12 to 0.14 ppm), but this may be due to natural sources of P in the rock layers underlying the river basin. Elevated levels of nitrate, acting with high P levels, are responsible for changes in the river system's community of algae (simple aquatic plants); -- from microscopic algae to mats of filamentous macroalgae. These algae can blanket and deprive more desirable native grasses below of the sunlight they need to grow. The elimination or reduction of native submerged grasses can negatively impact populations of aquatic animals that use the grasses for food and shelter, especially for their young. Some species of these algae can also cause allergic reactions in humans.

In response to these increased nutrient levels, the state of Florida has adopted a "Total Maximum Daily Load" or "TMDL" for the Wekiva River and Rock Springs Run for both nitrates and phosphorus. The TMDL requires that nitrate levels be reduced to 0.286 ppm and total phosphorus to 0.065 ppm. These levels should be low enough to limit the proliferation of macroalgae and return the Wekiva River system ecology to a more balanced, natural condition. The state is working with a group of local governments and other stakeholders to develop a Basin Management Action Plan to implement measures that reduce nitrate and total phosphorus to their target levels.



Excess nutrients contribute to the proliferation of filamentous algae. Algae mats form "heads" that float to the surface, which are unsightly and infest large areas along the shoreline making it impossible to swim as well as destroy fish breeding habitats.



Water Quality in the Wekiva River System

By Rob Mattson

The Wekiva River system is considered a spring-run stream ecosystem. Much of its water flows from thirty-two known springs that feed the Wekiva River and its tributaries: Rock Springs Run, the Little Wekiva River, and Blackwater Creek.

Some Average Numbers for the Wekiva River Near Wekiwa Springs

Water Quality Measure	Average Value	What It Tells Us
Nitrate	1.34	A form of nitrogen readily available to algae. Near-pristine in the Ocala National Forest average .05 mg/L. State mandates for the Wekiva system call for target reductions of nitrate ranging from 47 percent to 81 percent.
Dissolved Oxygen	2.71 mg/L	Amount of oxygen in the water to support life. Greater than 5 is very good. The spring is naturally low in oxygen because water emerging from deep in the aquifer has little oxygen. Oxygen from the air rapidly dissolves into the water as it moves down the stream channel.
Conductivity	315 micro siemens	Overall amount of dissolved minerals and salts in the water.
Turbidity	0.23 NTU	Amount of suspended matter in the water. The lower the value, the clearer the water.

Less rainfall during the dry season means periods of low flow. During these periods the Wekiva River, Rock Springs Run, and the lower reaches of the Little Wekiva run exceptionally clear because groundwater bubbling up from the underground springs provides most of the flow. During periods of higher rainfall, surface runoff washes dissolved organic carbon from surrounding swamps and flatwoods into the lower reaches of the river, giving the water a distinctive brown “tea” color. Water in the Wekiva River system is considered “hard-water, alkaline, and moderately clear,” due to the influence of the springs.

While the conductivity of the water in the river is relatively low near the headspring, as the Wekiva River flows north, it experiences a dramatic increase in conductivity in the lower reaches. Near the State Rd. 46 bridge, an inflow of ancient seawater, which lies beneath much of the middle St. Johns River, spikes the conductivity of the water from the 315 micro siemens near the headspring to 800 micro siemens. Some of the springs feeding the lower Wekiva (Island Spring and Nova Spring) are quite “salty,” due to this relict seawater, with conductivities of 3,000 to 5,000 micro siemens.

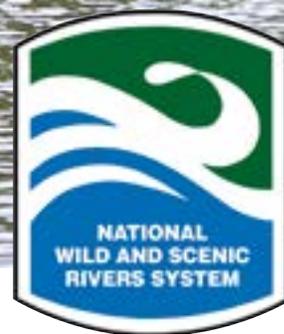
Dumping gasoline, oil and other household chemicals is illegal. If you see this happen, call the DEP Hotline at 800-320-0519, 24 hours a day, 7 days a week!

Wekiva National Wild and Scenic River

EXPERIENCE YOUR AMERICA™



Canoeists paddle along Rock Springs Run, part of the Wekiva River System



Designated

The Wekiva River together with Rock Springs Run and Blackwater Creek was designated by the United States Congress as a National Wild and Scenic River on October 13, 2000 - Public Law 106-299

Location

The 41.6 mile Wekiva River System, consisting of the Wekiva River, Wekiwa Springs Run, Rock Springs Run, and Black Water Creek, is located northwest of Orlando, Florida within Orange, Seminole, and Lake Counties.

Outstanding Resources

Scenery, recreation, geology including multiple springs that add to the flow of the river, cultural resources indicative of a rich history, and diverse habitats that support threatened and endangered species including one of the few remaining Florida Black Bear populations.

Overview

The Wekiva River Basin is a complex mosaic of rivers, springs, seepage areas, lakes, streams, creeks, sinkholes, wet prairies, hardwood hammocks, pine flatwoods, longleaf pine and wiregrass, xeric scrub oak, and sand pine scrub communities. The Wekiva Basin is the surface water drainage basin of the Wekiva River System. Elevations within the basin range from sea level to about 70 feet above sea level. The rivers and streams are both spring-fed and blackwater. Blackwater streams receive most of their flow from precipitation resulting in annual rainy season over-bank flows. The basin supports many plant and animal species that are endangered, threatened, or of special concern, including the Florida Black Bear, the American Alligator, the Bald Eagle, the Wood Stork, and the West Indian Manatee.

Today, over 2 million people live within 30 miles of the river system. The entire surface water basin drains over 396 square miles and represents one of the major routes of surface water drainage for the three counties. In addition to the surface water basin, the springshed of the Wekiva system, a much larger area, is worthy of mention as this is the area that supplies the groundwater flow to the springs. The springs of the Wekiva System are one of the many significant features of this Wild and Scenic river. Much of the land adjacent to the river system is in public ownership of either the State of Florida or the St. Johns River Water Management District, with smaller public recreational parks owned by Seminole and Orange Counties. These protected lands provide valuable wildlife habitat as well as to serve as a major Central Florida recreation area. The Wekiva is one of the most heavily canoed waters in the state and is an outstanding example of Florida's crystal clear springs and black-water creeks. Much of the private lands adjacent to the river system are within Seminole and Lake Counties. Much of the private lands adjacent to the river system are within Seminole and Lake Counties.

Project Goal

Over the past thirty years, human actions and an increasing population have created challenges to resource managers trying to protect the Outstandingly Remarkable Values (ORVs) of the Wekiva River System. The ORVs include: Scenic, Recreation, Wildlife and Habitat, Historic and Cultural and Water Quality and Quantity. The Wekiva Wild and Scenic River System Management Plan (currently in draft form) is the federally mandated management plan that describes a program to protect these ORVs. In accordance with the Wild and Scenic Rivers Act of 1968, these ORVs, the river's free flow characteristics and its immediate environment "shall be protected for the benefit and enjoyment of present and future generations" (section 1(b) Wild and Scenic Rivers Act). Unlike the majority of rivers comprising the National Wild and Scenic River System which are managed exclusively by either a federal or state agency, the Wekiva River is considered a "Partnership Wild and Scenic River." This distinction means that it is jointly managed by a consortium of local stakeholder groups referred to as the Wekiva River System Advisory Management Committee with oversight and coordination provided by the National Park Service (NPS).

The Committee, representing a diverse membership of state and regional agencies, Lake, Orange and Seminole local county governments, non-profits, environmental organizations and local citizens have completed the draft management plan which will be finalized and approved in 2011. The Committee is also now working on implementing action items identified in the Plan. One exciting project the Committee and NPS is working on is the development and implementation of a comprehensive Springshed Awareness Signage and Identity Program for the Wekiva Wild and Scenic River. Additionally, the Committee defined a River Coordinator position as a top priority need to help coordinate and implement projects to further enhance stewardship and protection efforts for the Wekiva. The River Coordinator is expected to begin in 2011, and activities will include implementation of the Wekiva Citizen Steward Initiative. Available funding has provided several canoes so that the Citizen Initiative will be ready to begin activities to promote the Wekiva Wild and Scenic River.

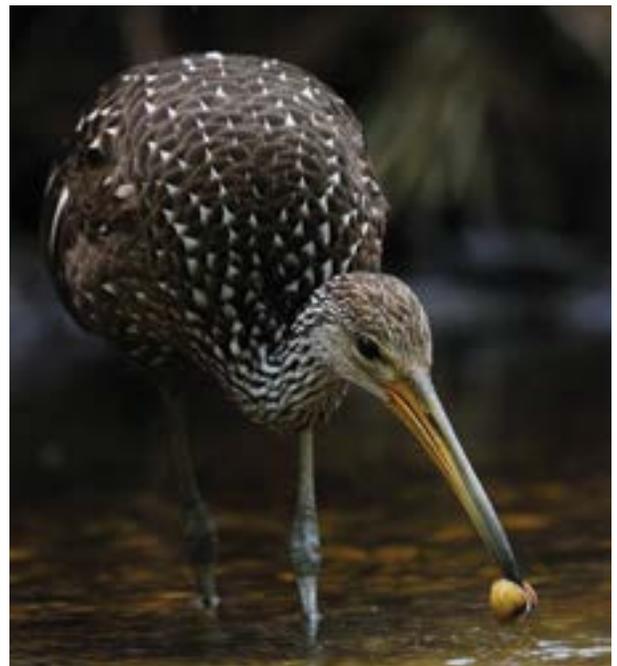
NPS Role

The National Park Service provides technical assistance, staff support and funding (contingent on appropriated funds) to assist in the development and implementation of the comprehensive river management plan.

Learn more about the Wekiva Wild and River System

Partnership:

National Park Service Rivers, Trails and Conservation Assistance Program
Florida Field Office
5342 Clark Road PMB 123
Sarasota, FL 34233
Jaime Doubek-Racine
jaime_doubek-racine@nps.gov
(941) 685-5912



Partnership Wild and Scenic River System

The 1968 Wild and Scenic River Act calls on the nation to preserve select rivers in a free-flowing condition. Rivers are chosen on the basis of outstanding values such as scenic, recreational, ecological, geologic, historic or cultural.

Most Wild and Scenic Rivers flow through federal lands, but Partnership Rivers flow through privately held lands or lands owned by local or state governments. The National Park Service provides funds, when Congress appropriates funding, and staff assistance to communities and local, state and county representatives to manage these rivers for the benefit and enjoyment of present and future generations.

The Wekiva River System was designated a Partnership Wild and Scenic River by an act of Congress in October 2000.

The Friends of the Wekiva River (FOWR) is a non-profit organization founded in 1982 to preserve the beauty and natural functions of the Wekiva River system. FOWR administers river management funds provided by the National Park Service. See page CXXX for more information on the Friends of the Wekiva River.



National Park Service
U.S. Department of the Interior

Be a Florida Friendly Landscaper

By Gabrielle Milch

The Wekiva River and many other aquatic systems in Florida have experienced a variety of environmental problems: water quality decline, decreased water supply, increased exotic and invasive plants, loss of natural habitats - the list goes on and on.

One common practice that has been linked to the decline in water quality and quantity is irrigation of residential landscapes. In the Wekiva Basin, this type of irrigation uses more water than any other activity. In addition to contributing to the depletion of our drinking water source — the Floridan aquifer - nutrient laden water from over-irrigated and over-fertilized lawns and landscapes eventually carries pollutants to our river system and aquifer. Non-native plants that feed off excess nutrients do not have natural controls to keep them in check, they easily take over native plants, destroying natural habitats in the process.



YARDS & LANDSCAPES



The Florida Friendly Landscaping™ Program, developed by The University of Florida's Institute of Food and Agricultural Sciences (UF/IFAS) in cooperation with the Florida Department of Environmental Protection, shows residents, developers, and green industry workers how becoming a Florida Friendly Landscaper can combat these serious problems while saving time and money.

The nine principles of Florida Friendly Landscaping™ are a good road map for making your landscape ecologically friendly and relatively low maintenance. Not all Florida Friendly landscapes look alike; each is a reflection of its owner's tastes and values. Some are showy, some are laid back; some emphasize water conservation, while others may focus on providing a habitat for wildlife and butterflies.

Other low-impact design principles such as rain barrels, cisterns, swales, berms and permeable surfaces also help conserve potable water and reduce the amount of storm water flowing into the river. Make sure the activities in your backyard are protecting the Wekiva River system now and for the future. Be a Florida Friendly Landscaper.



Learn more about Florida Friendly Landscaping:

Florida Friendly Landscaping™ or the Florida Yards and Neighborhoods Programs, visit fyn.ifas.ufl.edu/local.htm

For detailed descriptions of the nine principles, visit seminolecountyfl.gov/fyn

Find upcoming workshops and classes near your home, visit solutionsforyourlife.ifas.ufl.edu/map or call your county's UF/IFAS Extension Office:

Lake County: (352) 343-4101

Orange County: (407) 254-9224

Seminole County: (407) 665-5575

The Nine Florida Friendly Landscaping™ Principles

Right Plant, Right Place

Plants selected to suit a specific site will require minimal amounts of water, fertilizer and pesticides.

Water Efficiently

Irrigate only when your lawn and landscape need water. Efficient watering is key to a healthy Florida yard and conservation of limited resources.

Fertilize Appropriately

Less is often best. Over-utilization of fertilizers can be unhealthy to your yard and environment.

Mulch

Maintaining a 3" layer of mulch will help retain soil moisture, prevent erosion, and suppress weeds.

Attract Wildlife

Plants in your yard that provide food, water, and shelter can conserve Florida's diverse wildlife.

Control Yard Pests Responsibly

Unwise use of pesticides can harm people, pets, beneficial organisms, and the environment.

Recycle

Grass clippings, leaves, and yard trimmings recycled on site provide nutrients to the soil.

Reduce Water Runoff

Water running off from your yard can carry pollutants such as soil, debris, fertilizer and pesticides that can adversely impact water quality. Reduction of this runoff will prevent non-point source pollution.

Protect the Waterfront

Gain understanding that everyone lives in a watershed that eventually flows into a water body. Every homeowner has an impact on our natural resources.

Protecting the Wekiva River Begins in Your Backyard

Green What's the Price for Grass?

By Leesa Souto

Ever wonder why some of the lakes and rivers in Central Florida look green? The water itself is actually clear.

The green comes from plant matter - duckweed, salvinia, or plant-like algae. Duckweed is a tiny aquatic native plant that thrives in slow moving to stagnant water and is a favorite food of ducks. Salvinia, a slightly larger aquatic plant that grows in small clusters, is a favorite food of baby and juvenile freshwater turtles. Both of these plants are natives and found in healthy water bodies. A variety of algae are also native to Central Florida lakes and rivers. What is unnatural is the proliferation of algae into highly visible, slimy green or brown mats that attach themselves to underwater vegetation, and float in clusters on the water's surface and lap up against our shorelines. One particularly troublesome blue-green algae, the filamentous *Lyngbya*, has become prevalent in the Wekiva River. The prolific hair-like clusters floating on the water's surface restrict the needed sunlight that filters down to beneficial underwater native plants. *Lyngbya* also contains oleic acid crystals, which is a skin irritant to some humans.



Why is *Lyngbya* proliferating in the Wekiva River system? Excess nutrients that make their way to the Wekiva are readily used by *Lyngbya*. Residential fertilizers are one source of the nutrients that feed algae in the Wekiva and can also keep other lakes and rivers green. According to a 2010 study¹ prepared for the St. Johns River Water Management District and the Florida Department of Environmental Protection, about fifteen percent of the nitrogen in the Wekiva Basin is attributed to residential fertilization. This includes surface runoff as well as seepage underground that goes through the aquifer.

A recent research study² conducted by the University of Central Florida demonstrates that certain communities in the Wekiva area receive higher nutrient inputs in the form of lawn fertilizer than others. The amount of nutrient input into the river system may have a lot to do with particular mandates or desired landscape conditions required by community homeowner associations (HOAs). Individuals living in HOA-controlled communities reported fertilizing their yards nearly twice (1.65) as many times as homeowners who applied fertilizer themselves. In some cases, the same communities where residents apply fertilizer more frequently also use nitrogen-rich reclaimed water to irrigate. This translates into increased nitrogen inputs to a system that is already overburdened with nitrates and phosphates (see page 24, "Nutrients in the Wekiva" by Rob Mattson regarding nutrient enrichment in the Wekiva).

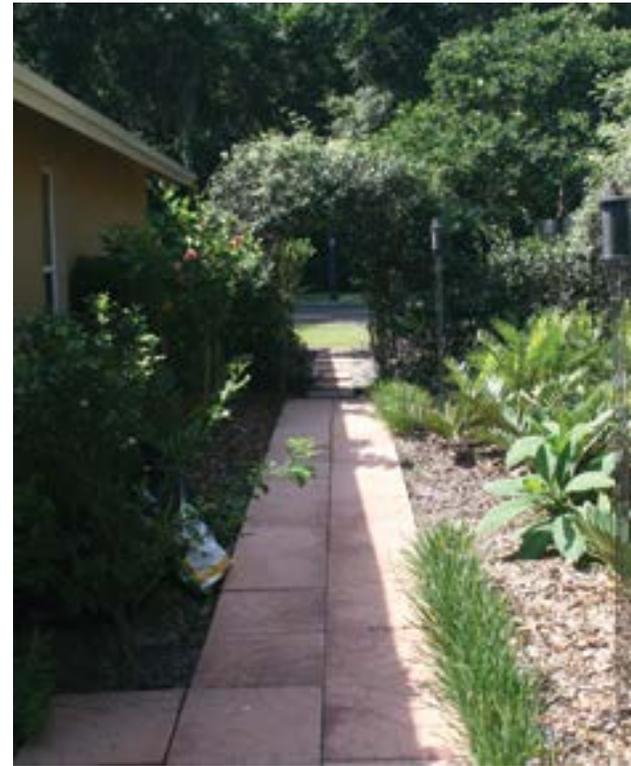
References

1. Maltel. 2010. Final report wekiva river basin nitrate study.
2. Souto, L., Collins, M., Barr, D., Milch, G., Reed, J., & Ritner, M.D. 2009. Wekiva Residential Fertilizer Practices. University of Central Florida: Storm-water Management Academy. Prepared for FDEP.

Homeowner associations take the lead role in establishing the community landscape expectation and aesthetic, driving homeowners to cultivate greener and greener turf grass.

A review of thirty-one randomly selected Wekiva area HOA covenants, showed that few encouraged sustainable landscape practices. Some even discouraged them. Legislation passed in the summer of 2009 now prevents HOAs from discouraging sustainable landscaping practices.

What can you do to help prevent excess nutrients from fertilizer from getting into the Wekiva River system? Work with your HOA and landscape review (or similar) committee to refine and develop sustainable landscape criteria for your community. Reduce the amount of turf grass in your yard and expand the area of native and drought-tolerant plant beds. Plant more trees and butterfly gardens in common areas. More sustainable landscaping tips can be found in the article by Gabrielle Milch, page 28, "Florida Yards and Neighborhoods," on Florida-friendly landscaping. Ask your landscape professional what they apply to your lawn every month. When it comes to fertilizing your yard, ask yourself, "Am I paying for green grass at the expense of clean water?"



Legislation passed into law in summer 2009 which now prevents Homeowners Associations from discouraging sustainable landscaping practices.



Septic Systems and the Weki

By Gary Raulerson

Septic systems, also known as Onsite Sewage Treatment and Disposal Systems, are individual wastewater treatment systems for areas (homes or businesses) not connected to a centralized sewer system. According to the US Environmental Protection Agency, approximately 25% of homes in the United States are on some sort of septic system. It is estimated that about 65,000 homes, out of approximately 173,000, in the defined Wekiva Study Area use septic systems. This is somewhat higher than the national average. Historically, they were designed to remove fecal bacteria from wastewater. During the treatment process (Figure 1), wastewater from a home (or other buildings) flows into the septic tank, where solids, oils, and grease separate out and some initial decomposition occurs. Further treatment happens when the remaining liquids flow into the nearby drain field and then percolate slowly into soil. Unfortunately, even when properly sited, constructed, and maintained, septic systems do not efficiently remove nutrients from the wastewater.

Consequences of Failing Septic

Failing septic systems can release a very large amount of nutrients to the surrounding watershed. Septic systems can fail under a variety of conditions, including if the area used for the drain field is too small, the drain field is sited too close to an open water body, soils are not ideal for treatment, or proper maintenance is not performed. Additionally, heavy rainfalls (such as those seen when three hurricanes came through the region in 2004) that saturate the drain field can also compromise the ability of the system to function properly. During system failures, health and environmental issues arise, including exposure to fecal coliforms and greatly increased nutrients (primarily nitrogen and phosphorus) floating “downstream” to the aquifer or directly across to the nearest open water body (such as the Wekiva or its tributaries). Situating septic systems in a flood plain can also be problematic, since any flooding can cause the system to fail.

What goes down, must come up!

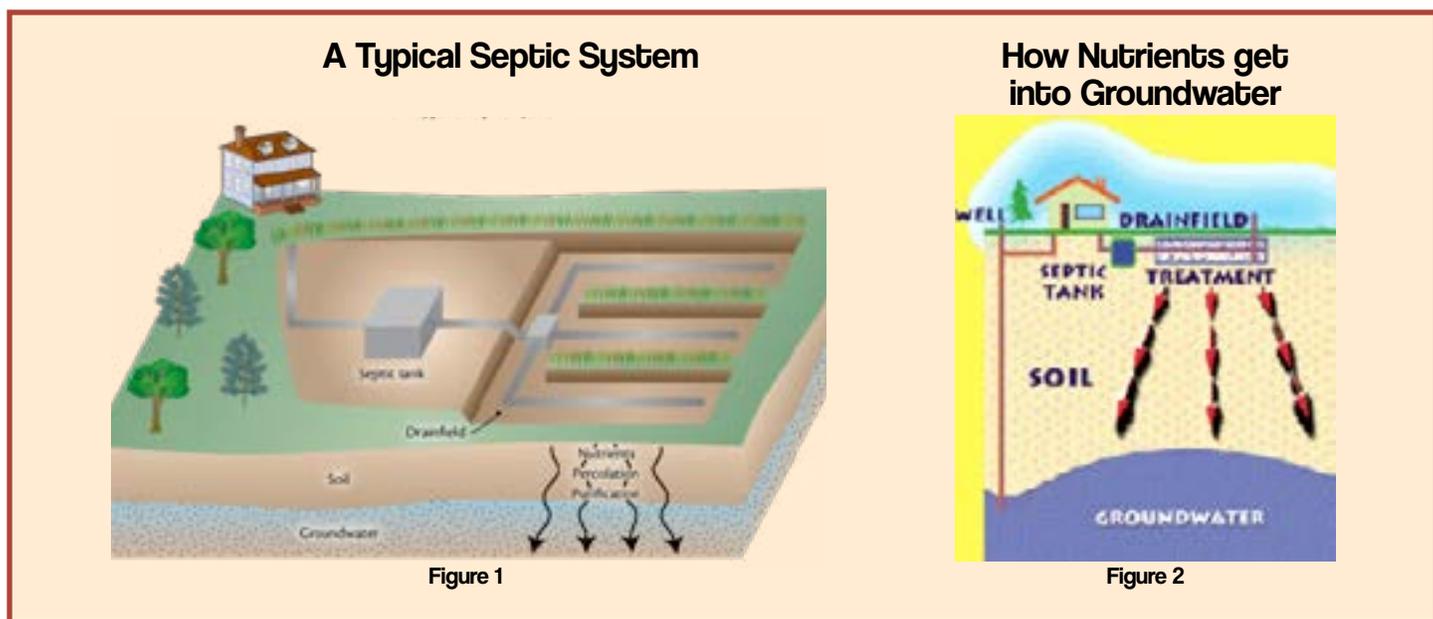
va

Effects of Nitrates

Nitrate (a form of nitrogen readily available to plants) is a primary pollutant of concern within the Wekiva River and is part of the reason the Wekiva is designated as “verified as impaired” under the Federal Total Maximum Daily Loads Program. A study estimated the nitrate levels in the Wekiva are 89 percent higher than would occur if the entire area was undeveloped, and approximately 26 percent of the nitrate entering the Wekiva comes from areas using septic systems. As a comparison, central sewer systems contribute about 12 percent of the basin nitrate load while servicing a larger number of people and businesses. Improvements to septic systems, including new technology, regular maintenance, and connection to regional sewer systems (where possible) could reduce the total nitrate load by 20 percent.

Current Efforts

Considerable efforts have been made, both locally and nationally, to improve wastewater treatment. Many municipalities have upgraded septic systems using newer technologies that remove much greater amounts of nutrients or converted large areas of septic systems to central sewers. Although this has an increased up-front cost, future benefits by the homeowners and the community, including less personal maintenance, increased home values, and better water quality, are strong motivators.



Call to Action

What can you do as a homeowner with a septic system to help improve the water quality of the Wekiva? Your primary responsibility is to maintain your system to ensure it is operating properly. Failed systems contribute a much greater amount of nitrogen and bacteria, further degrading water quality and greatly increasing health hazards. Do not put toxic chemicals or most solids down the drain, they can clog the system or kill the organisms treating your waste. If you have an older or failing system, upgrading to something more modern and effective can remove up to 75 percent of the nitrate currently leaching away. Also, believe it or not, following regular water conservation practices also help. When less water is pushed through the system, the remaining water is treated for a longer period of time removing more of the nutrients and bacteria. Installing low-flow toilets, using water conserving appliances, installing faucet aerators and high-efficiency shower heads, and using many other water-saving options that are important in so many other ways can also make your septic system work better. Finally, talk to your neighbors and let them know all the ways we are impacting this beloved place. Take action and take care of the Wekiva!

Living The Promise

By Deborah Shelley and Bob Levy

A journey on the Wekiva River is one that evokes the promise of adventure to many, calm and solace to others, the promise of a peaceful respite from the hectic world of traffic, computers, and cell phones. The promise of returning home to memories of our youth boating or canoeing with family and friends, sunny days, cool water, and that sense of place that is the Wekiva River.

Over the past year, the Wekiva River Promise Committee worked hard to accomplish our mission to increase public awareness of the ecological value of the Wekiva River Basin and encourage personal stewardship through individual actions. We created this informative magazine to generate awareness of the amazing Wekiva River Basin and are seeking for individual promises to protect it.

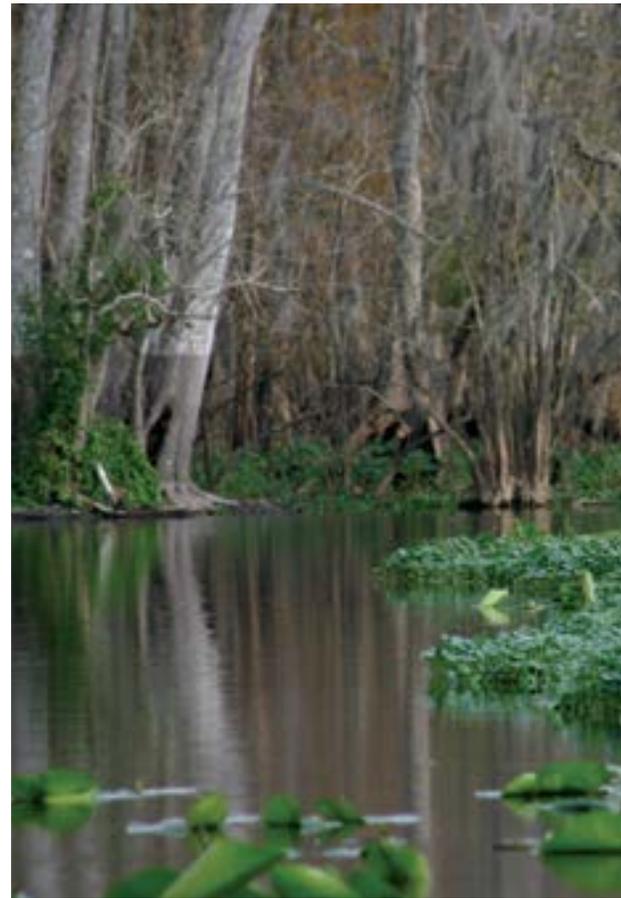


The Rotary Club of South Seminole County is pleased to provide you this information. Our hope is to provide a better understanding of what we can do to be good stewards of our environment, to help protect, preserve and restore the Wekiva River for our families and future generations.

What we know...Rainfall is a predominant force in Florida's ecology. Rain water falling on the land surface throughout the basin and springsheds percolates through the aquifer, eventually finding its way to the spring vents at Wekiwa Springs and Rock Springs, the headwaters of the Wekiva River. Rainwater falling on the land also makes its way into the aquifer

and to our drinking water sources, as well as to the wetlands, swamps and numerous tributaries that flow directly to the rivers that make up the Wekiva ecosystem.

Unfortunately, rain water falling on the land surface also picks up and carries with it everything that is deposited on the land. Everything from nutrients – in the form of fertilizers and septic leachate, to tennis balls, cigarette butts and all manner of debris discarded by uninformed or careless people - eventually finds its way into the river system. Visible litter can be seen and removed by staff and volunteers, but an unseen enemy is silently and slowly altering the rivers ecology.





The Unseen Enemy

The unseen enemy is nutrients. Excess nutrients act in the water just as they do on land - they fertilize native and non-native plants and algae. The filamentous blue green algae - Lyngbya (pronounced ling bee ah) is a major recipient of excess nutrients. Dense brown hair-like mats of Lyngbya are unsightly, smother native grasses, and produce toxic chemicals. In flowing water, algae is known to absorb nutrients faster than other plants, so they proliferate more rapidly than other typically more beneficial plants.

Storm water retention ponds capture a significant amount of runoff from the land surface, and Florida is a leader in storm water management, but many older communities were built before storm water regulations were required.

Through water quality monitoring, we have learned that some nutrient levels in our springs are almost 70 percent higher than nutrient levels in other Florida springs located in predominately undeveloped areas, like the Ocala National Forest.

Research has located high recharge areas, delineated the boundary of the Wekiva and Rock Springshed and provided evidence that spring flow to the Wekiva River is decreasing. A looming potable water crisis has prompted water management officials to search for alternate water sources and restrict lawn irrigation.

So what can we do to be better stewards of our own water supply and our river? Learn about the ecology of the river, get involved, do your part – take the Wekiva River Promise! Living the promise simply means that everyone, every one of us, does our part to protect our water supply, prevent pollution and keep our waters clean.

The Wekiva promises to keep you cool, provide extraordinary vistas, delight with birds, fish, turtles and other wildlife, replenish the spirit, provide adventure, and make memories that will last for generations.

What do you promise the Wekiva?

We Otter Care

By Steve Phelan

The Weki- in Wekiva means water. The -va means river. Since all the plants, animals, and people in the river basin are mostly made of water, we might as well say the We in Weki means us.

We depend on water for life, water from the same aquifer from which the springs originate. We stand with the soil and habitats of this river community, with the fish and game, the flower and butterflies, the turtles and the bears. We Otter Care. That's the motto of The Friends of the Wekiva River (FOWR). We care especially for our children and our schools, our neighbors and our public officials that they should work with us to protect, preserve, and restore the river that We are. That's our mission.

The river always pays us back for all our efforts. We get to swim at the springs, hike the uplands and lowlands, paddle all the channels, ride our horses and bicycles along forest trails, fish and hunt across the basin, and chase after all the birds and butterflies. The otter, that dear old amphibious mammal, urges us thus to romp and roll because he would agree with Emerson that "wisdom consists in keeping the soul liquid."

We tend to think that our home and yard are an extension of ourselves, but the opposite is also true. The river is an extension of the aquifer, the uplands of the river, our yards, our homes, and ourselves extensions of the earth. Every year we host Wekiva Riverfest, a festival to celebrate all these river gifts and to gather support for our next initiative.

Your endorsement of the Wekiva Promise is urgently needed, now more than ever. We hope as many homeowners as possible will pledge support for the best practices of waste management, yard maintenance, and water conservation that science has taught us. We need your help.



What Can Your Neighborhood or Homeowners Group Do?

- Make the promise as a group
- Ask your yard care company to adopt the state's Best Management Practices.
- Encourage native plantings in private and common areas
- Learn about and use Florida Friendly landscaping
- Reduce lawn size in favor of mulched flower beds, butterfly gardens or shrubs
- Work to control invasive exotics
- Monitor lawn and garden watering both the timing and amount per watering period

We urge you to join the We.

Please join us this year in fostering the Wekiva Promise. It will help us speak for the Wekiva in the halls of government. It will enhance your own home place, creating a healthier environment for your family, plants, and animals. We hope then the promise will spread like sunshine across your neighborhood and the entire basin.

Building our community around the Wekiva makes perfect sense.

**FRIENDS
OF THE
WEKIVA
RIVER,
INC.**



If you are convinced about the value of the Wekiva Promise, please join us as a leader in your own neighborhood or homeowners associations.

Learn more about the Friends of Wekiva River:
FOWR, P. O. Box 6196,
Longwood, FL 32791-6196 or visit
friendsofwekiva.org

the **Wekiva** Promise
 Make
 River
 South
 Seminole
 County
 Club
 Rotary

The Wekiva River Promise

1. I will use less fertilizer, no fertilizer or slow-release fertilizer on my lawn.
2. I will have my septic tank inspected and, if needed, pumped out every five years.
3. I will plant native or drought tolerant trees, shrubs, and ground cover.
4. I will use pesticides and herbicides only when absolutely necessary.
5. I will write a letter to my local government official, county commissioner and/or state legislators to let them know I support protecting the Wekiva River Basin.

Your Promise helps protect the Wekiva River and Springs from the damaging effects of nitrates. All the proceeds from Promises are used on projects to make a difference in the Wekiva Basin.

With everyone doing their part, the Wekiva River will endure as a special place to enjoy many generations to come.

Making the promise is easy, complete the form below and mail it back or visit ssrotary.com/promise

If you have any questions, please contact the Rotary Club of Seminole County South

wekivapromise@ssrotary.com

or

407-834-6818

DETACH HERE and mail to: Rotary Club of Seminole County South, P.O. Box 160306, Altamonte Springs, FL 32716

I am making a Promise to the Wekiva!

\$20.00 - I promise to adopt the Wekiva River Promise includes Magazine, DVD and Yard Marker

\$5.00 - I'd like to learn more Magazine Only

Name _____

Neighborhood _____

Address _____

City _____ ST _____ Zip _____

Tel _____

E-mail _____



DISCOVER THE GREEN A UNIQUE CARBON NEUTRAL RIVERSIDE OASIS*

REDISCOVER YOUR RIVER AT WEKIVA ISLAND

Clean water is a crucial resource to sustaining life. Where else in Florida can one see testament to the importance of water as in the Wekiva River basin? This springfed-riverine habitat, teeming with animals and plants, is beautiful and truly unique. The water from these springs used to be unpolluted and plentiful. Today, pollutants from agriculture, stormwater runoff, wastewater, septic tanks, automobiles, and other human activities have deteriorated the Wekiva River. Years of over-withdrawal for human uses has caused there to be less water coming out of the springs. As stewards of the land, what are we going to do about this trend?

At Wekiva Island, we are committed to lead by example. To help protect the river, we have voluntarily initiated numerous activities that improve the way water is used on our property. During our restroom remodel, we installed toilets and sinks that use far less potable water than typical standard restroom facilities. Two cisterns have been purchased to collect roof water which will be used for the little water our restroom facilities will consume. All wastewater generated by the restrooms is pumped off the property and treated at a commercial wastewater treatment plant; no septic tanks are used.

Non-native landscaping has been removed and replaced with Florida friendly landscaping that does not require irrigation. We also remove and control exotic and nuisance vegetation. We have planted large areas with native floodplain vegetation to create buffers along the canals and will continue to do this until the entire river is protected. As river stewards, we continually strive to collect stormwater runoff from parking areas and direct the drainage across grassy areas to help settle out pollutants.

Wekiva Island is also reaching into the community to help water awareness. We are supporting the Wekiva River Promise and Equinox Documentaries Eden to Sahara project. Please join us in our attempt to make Wekiva Island a showplace for environmental stewardship, sustainability, and water resource management while having a wonderful time with your friends.

summer hours

Sunday - Wednesday
8:00AM - 10:00PM

Thursday - Saturday
8:00AM - Midnight

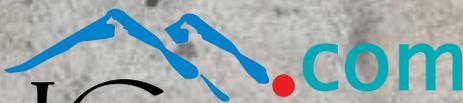
(407) 862-1500

wekivaisland.com



Leave
no trace

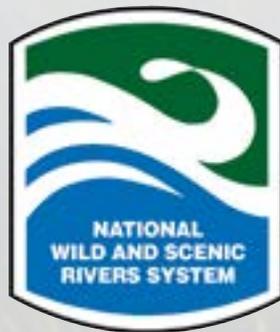



TravelCountry[®]
Gear for Your Outdoor Adventure

1101 E Altamonte Drive • Altamonte Springs, FL 32701
407.831.0777 • 1.800.643.3629

30 years of support for conservation and responsible use

Corporate Sponsors



Main Sponsors



Personal Sponsors

Biosphere

Mrs. Shelia Brown

Mr. John & Shannon Costello

Ms. Claire Crane & Ms. Joan Regan

Dr. Leonard & Mrs. Seline Dreifus

Miss Isabella Goldfarb



Air Care and our Community

In addition to beautiful natural resources like the Wekiva River, our community is home to a great medical resource in South Seminole Hospital, a part of Orlando Health.

South Seminole Hospital, located in Longwood, is proud to be the home to Seminole County's only permanently based Air Care trauma helicopter team. Within minutes, this specially trained helicopter team can respond to critically ill or injured patients and transport them to Orlando Regional Medical Center, the only Level One Trauma Center in Central Florida.

To learn about our complete line of services, visit southseminolehospital.com.



555 W. State Road 434
Longwood, FL 32750
southseminolehospital.com

Credits

Graphic Design

Shannon Costello

Basin Map Design

Jennifer Chasteen

Wekiva Promise Video

Production

Equinox Documentaries

Bill Belleville

Bob Giguere

Promise Steering Committee

Bill Belleville

Shannon Costello

Bob Giguere

Bob Levy

Deede Parker

Steve Phelan

Jim Robison

Deborah Shelley

Peggy Thomas

Photos

Jim Urbach - Magazine Cover, Table of Contents, Rotary Introduction

Don Brouillard- pages 6, 31, 34, 35, 36

Shannon Costello- page 37

Beth Crawley- page 4

Julie Fisher- pages 10-11, 12, 13, 34-35

Barbara Howell- pages 4-5, 11, 13, 18

Lou Ley- page 30

Rob Mattson- page 24

John Parker- pages 7, 30, 34

Don Philpott- page 9

Jim Robison- pages 7, 10, 28

Deborah Shelley- pages 13, 24, 25, 28, 29, 31, 37

Jim Urbach- pages 2, 4, 5, 8, 17, 19, 37

Cambrian Foundation- pages 22, 23

Florida Wildflower Foundation and

Visit Florida- pages 29, 35

St. Johns Water Management- pages 14-15

Advertising and Public Relations

Massey Communications

Judith Topper Publications

Wekiva River Promise Committee

Bob Levy - Chair

Shannon Costello - Chair

Deborah Shelley - Advisor

Marv Kuyper

Russ Moncrief

Bill Potter

Bill Stack

Peggy Thomas

Judith Topper

Jim Urbach

Septic Tank Images

Figure 1. Courtesy of Maryland Coastal Bays

Figure 2. Courtesy of Florida Department of Environmental Protection

