

# Florida LAKEWATCH



Dedicated to Sharing Information About Water Management and the Florida LAKEWATCH Program Volume 61 (2013)

## LAKEWATCH Welcomes New Director Mark Hoyer



Florida LAKEWATCH founder Dan Canfield (right) with new LAKEWATCH Director Mark Hoyer in the Florida LAKEWATCH laboratory.

Dear LAKEWATCHER-s,

Since 1979 Dr. Daniel E. Canfield Jr., has pursued a stellar career as a Limnologist for the University of Florida, excelling in many areas of teaching, research and extension. In 1986 Dr. Canfield initiated a volunteer monitoring program called Florida LAKEWATCH, which he has since directed into one of the nation's largest and most successful citizen monitoring programs. Since 1986, reliable long-term water quality data have been collected on

over 1100 lakes, 175 coastal sites, 120 rivers and 5 springs in 57 counties. A recent example of LAKEWATCH's impact and success, the statewide data collected by Florida LAKEWATCH allow Dr. Canfield and others to understand how Florida's complex geology is the primary factor determining nutrient concentrations in Florida's aquatic systems. This research is now imbedded in Florida's new numeric nutrient criteria.

Recently, Dan decided to turn over

the leadership of the Florida LAKEWATCH program and to continue to concentrate on his teaching and research activities. Dan Canfield is also considering the task of writing a book on the Limnology of Florida lakes.

We have selected Mark Hoyer to fill the role as the Director of Florida LAKEWATCH. Mark was with Dr. Canfield at the start of Florida LAKEWATCH, was serving as the Assistant Director and has been with the University of Florida for 30 years participating in many research projects on streams, lakes and estuaries. With the data from these projects, Mark has authored/co-authored over 90 peer-reviewed papers and four books related to lakes management activities.

Professionally, Mark is an active member of both national and state chapters of the North American Lake Management Society (NALMS), American Fisheries Society (AFS) and Aquatic Plant Management Society (APMS). Mark is a NALMS Certified Lake Manager (CLM) and an AFS





Florida LAKEWATCH Director Mark Hoyer teaching Florida panhandle IFAS Extension agents about the LAKEWATCH program.

Certified Fisheries Scientist (CFS). Mark has been especially active in NALMS serving as NALMS President from 2009 – 2011. Mark has also been active in the Florida Lake Management Society (FLMS) since its beginning in the early 1990-s receiving FLMS awards for Best Paper (1993), The President's Award (1996) and the Edward Deevy, Jr. Award (2008). Additionally, Mark serves on the Executive Board for the National Reservoir Fisheries Habitat Partnership, representing NALMS. He also serves on the Florida Water Resources Monitoring Council representing Volunteer Monitoring Programs and under that entity is actively working with both the Groundwater Salinity Network Working Group and Coastal Water Monitoring Network Working Group.

LAKEWATCH enjoyed the excellent leadership of Dr. Dan Canfield for more than 25 years and now is in the capable hands of Mark Hoyer to meet the future needs of Florida lakes.

**Tim White**  
**Professor and Director**  
**School of Forest Resources and**  
**Conservation**  
**IFAS, University of Florida**

## A Statement From New Director Mark Hoyer

*Hi LAKEWATCHERS*

*Dr. Canfield has been and always will be the "Founding Father" of Florida LAKEWATCH. The bad news is that Dr. Canfield has decided to step down from the leadership of the program and the good news is that he is not going far as he will be in his same office working with graduate students and maybe even writing a much needed book on the Limnology of Florida lakes. LAKEWATCH will miss his leadership but will move forward with the mission that Dr. Canfield imbedded into the program of researching the limnology of Florida lakes and helping stakeholders understand and manage Florida's aquatic resources.*

**Mark Hoyer**  
**Florida LAKEWATCH Director**



Florida LAKEWATCH Founder Dan Canfield working with Graduate Students at the University of Florida.

# Attention LAKEWATCH samplers- New Data sheets will soon begin arriving at your local collection center.

Many of you have been following our recent efforts to ensure the longevity of the LAKEWATCH program through initiative with the Florida Department of Environmental Protection (FDEP) and the University of Florida/Institute of Food and Agricultural Sciences Cooperative Extension System. One of the results of these initiatives has been the adjustment of LAKEWATCH's data management and processing so LAKEWATCH data better fits the Quality Assurance and Quality Control (QA/QC) rule that FDEP has to follow.

As a part of that process we are updating our data sheets to be more consistent and with FDEP.

In order to get the volunteers more familiar with the new data sheets we will go over some of the changes in this newsletter.

First though, we will start with what is not changing. There will continue to be two types of data sheets, one for fresh water and one for saline (coast) water. The saline water data sheet will continue to be printed on blue paper.

We will now go over some of the changes.

1. First, under the opening information about Lake Name, County, Sampler name, phone, date and time you will now find a checklist. There will be three lines for you to check off either "yes" or "no" (see figure 1). The first is "Surface Water Collected for Total Phosphorus and Total Nitrogen." The next is "Surface Water Collected for Chlorophyll and Filtered within 48 hours." The last is "Secchi Depth Reading Taken."
2. The next change that you will notice, will be below the box where vanishing point, sun code and water depth are recorded. We have removed the section on wind and wave height.
3. On the original data sheet following this section was a section for you to make note of any unusual events that may have influenced your lake since your last sampling

event. In that section was a number of suggestions, i.e. pollen on lake, heavy boat traffic, unusual weather, etc. On the new data sheet that section is still there except there are no suggestions for you. Instead the section simply asked for you to describe the amount and duration of any unique occurrences that have occurred within two weeks or so before your sampling date either in the lake or *on the local watershed* (the italicized is new).

For the saline data sheets the same changes have been made for the checklist, the section on wave height and wind. The section for unusual events has also been changed as in the fresh water sheets except that you are asked to describe the amount and duration of any unique occurrences that have occurred within two weeks or so before your sampling date either in the *coastal waters* or on the local watershed (the italicized is different from the fresh water sheet, see figure 2).

## Florida LAKEWATCH Freshwater Data Sheet

Lake Name/County: \_\_\_\_\_ Sampler: \_\_\_\_\_

Phone: (     ) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

1. New  
checklist



Yes\_\_\_ No\_\_\_: Surface Water Collected for Total Phosphorus and Total Nitrogen.  
 Yes\_\_\_ No\_\_\_: Surface Water Collected for Chlorophyll and Filtered Within 48 Hours.  
 Yes\_\_\_ No\_\_\_: Secchi Depth Reading Taken

### Secchi Disc Measurements:

- For **Secchi depth** and **water depth** measurements, please indicate the number of feet and then estimate and circle the appropriate fraction, if needed.
- If your **disc is visible on the bottom** write **B**, If your **disc disappears in the weeds** write **W**, in the **vanishing point** column and the **depth** at which your disc disappears.

Vanishing Point	Sun Code Number	Sun Code Key <small>Use the codes from below to fill in the Sun Code Number column.</small>	Water Depth
<b>Sta 1</b> ft. 1/4 1/2 3/4		1 = full sun	ft. 1/4 1/2 3/4
<b>Sta 2</b> ft. 1/4 1/2 3/4		2 = haze over sun	ft. 1/4 1/2 3/4
<b>Sta 3</b> ft. 1/4 1/2 3/4		3 = thin cloud cover	ft. 1/4 1/2 3/4
		4 = medium cloud cover	
		5 = heavy cloud cover	

2. No wind  
and wave  
height  
section.



**DESCRIBE** the amount and duration of any unique occurrences that have occurred within two weeks or so before your sampling date either in the lake or on the local watershed:

3. Suggestions were removed and "or on the local watershed" was added.



**Lake Level Measurements:** Please circle or describe the type of gauge located in the lake and then record the lake level. **Type of Staff Gauge:** WMD / City / LCWA / USGS / Other (Please describe): \_\_\_\_\_

**Lake level:** \_\_\_\_\_

**Rain (in.) since last report:** \_\_\_\_\_

\* If you wish to record lake levels of your lake, please fill in these last two blank. Call LAKEWATCH (1-800-LAKEWAT) if you have any questions on how to get started.

Figure 1. The new LAKEWATCH freshwater data sheet.

## Florida LAKEWATCH Saline Data Sheet

Lake Name/County: \_\_\_\_\_ Sampler: \_\_\_\_\_

Phone: (     ) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

1. New  
checklist



Yes\_\_\_ No\_\_\_: Surface Water Collected for Total Phosphorus and Total Nitrogen.

Yes\_\_\_ No\_\_\_: Surface Water Collected for Chlorophyll and Filtered Within 48 Hours.

Yes\_\_\_ No\_\_\_: Secchi Depth Reading Taken.

### Secchi Disc Measurements:

- For **Secchi depth** and **water depth** measurements, please indicate the number of feet and then estimate and circle the appropriate fraction, if needed.
- If your **disc is visible on the bottom** write **B**, If your **disc disappears in the weeds** write **W**, in the **vanishing point** column and the **depth** at which your disc disappears.

Vanishing Point	Sun Code Number	Sun Code Key <small>Use the codes from below to fill in the Sun Code Number column.</small>	Water Depth
<b>Sta 1</b> ft. 1/4 1/2 3/4		1 = full sun	ft. 1/4 1/2 3/4
<b>Sta 2</b> ft. 1/4 1/2 3/4		2 = haze over sun	ft. 1/4 1/2 3/4
<b>Sta 3</b> ft. 1/4 1/2 3/4		3 = thin cloud cover	ft. 1/4 1/2 3/4
<b>Sta 4</b> ft. 1/4 1/2 3/4		4 = medium cloud cover	ft. 1/4 1/2 3/4
<b>Sta 5</b> ft. 1/4 1/2 3/4		5 = heavy cloud cover	ft. 1/4 1/2 3/4
<b>Sta 6</b> ft. 1/4 1/2 3/4			ft. 1/4 1/2 3/4
<b>Sta 7</b> ft. 1/4 1/2 3/4			ft. 1/4 1/2 3/4
<b>Sta 8</b> ft. 1/4 1/2 3/4			ft. 1/4 1/2 3/4
<b>Sta 9</b> ft. 1/4 1/2 3/4			ft. 1/4 1/2 3/4
<b>Sta 10</b> ft. 1/4 1/2 3/4			ft. 1/4 1/2 3/4

2. No wind  
and wave  
height  
section.



**DESCRIBE** the amount and duration of any unique occurrences that have occurred within two weeks or so before your sampling date either in the coastal waters or on the local watershed:

3. Suggestions were removed and "or on the local watershed" was added.



Tide: Please circle one in each column. Example: High and Falling.

<b>High</b>	<b>Falling</b>
<b>Low</b>	<b>Rising</b>

*Call LAKEWATCH (1-800-LAKEWAT) if you have any questions on how to get started.*

Figure 2. The new LAKEWATCH saline water data sheet.



# **Dip-In 2013—June 29 to July 21**

## **Report on the 2012 Dip-in**

### **The Dip-In is 18 years old!**

The (Great American) Secchi Dip-In began in 1994 in response to the lack of national water quality data. The first, and last national monitoring effort had been in 1973-74, when the EPA's National Eutrophication Survey visited more than 700 U.S. lakes and reservoirs.

Twenty years had passed without another look at the national status of lakes, or, for that matter any other of our waterbodies. The idea of the Dip-In was to attempt to remedy this lack of information by enlisting the volunteer monitoring community to gather data.

In 1994, volunteer monitoring was in its infancy and monitoring programs were centered in only few states. A second and no less important goal of the Dip-In was to stimulate the growth of volunteer monitoring. As we have found out through the Dip-In, volunteer monitoring can be an important aspect of a state's data gathering.

The first year of the Dip-In began with only eight mid-western states,

but rapidly grew to eventually include programs from all 50 US states and most of the Canadian provinces. We learned that while there may be few statewide monitoring programs, individuals, lake associations and environmental groups have stepped into the gap and have provides data on at least some of the states' waterbodies.

Funding cutbacks curtailed the mailing of paper questionnaires and reports to the volunteers in the late 1990's. Paper questionnaires were highly effective at getting returns, but were expensive to print and mail and required a staff to enter all the returned data. This loss of a non-digital means of communicating with program coordinators and volunteers has increased the difficulty of keeping up-to-date contact records and has increased the difficulty for volunteers to enter their own data.

### **The Dip-In in 2012**

Eighteen years later, volunteers still faithfully contribute data to the site. Our website ([www.secchidipin.org](http://www.secchidipin.org)) has become the center of our

communications effort, receiving approximately 4,000 hits per month (51,696 hits on our most popular pages in 2012). Participants can enter, edit, and retrieve data from any of the 7,000 plus contributing waterbodies. The purpose of the database is not to compete with federal or local databases, but to allow readily-available information on an international scale. For smaller programs and individual volunteers, the database allows a safe place to deposit their data.

Budget restraints have forced the closing or downsizing of a number of statewide volunteer programs. For these programs, the Dip-In database provides a place to the volunteers to continue posting data during these budgetary hard times at no cost to the program.

A major use of website continues to be the Methods section of the site. These pages are intended to give individuals and programs some insight into what variables can be measured by volunteers, what are their importance, and what methods are currently being used by

volunteer programs. The most popular pages are those on techniques of phosphorus, chlorophyll, Secchi depth, and trophic state information.

The ability for volunteers to enter their own data at the website may have been the most important one in keeping the Dip-In going. It's not easy for some volunteers to navigate the site because of the quirks and size of the entry forms, but for those that overcome these barriers, a series of graphical tools are available for data analysis. Paper forms, and eventual entry, are still available as well.

### **It's Not All About Transparency**

A common question by our volunteers is "I contribute my data to our local program; why don't you get the data from them?" It might seem simpler, and more comprehensive, if we were to call up monitoring programs once a year and ask for their year's data, but there are some reasons why we don't emphasize getting the data from programs.

First, we aren't dealing with a handful of programs.

Volunteers from well over 400 programs, with often consisting of less than 10 volunteers participate in the Dip-In. New programs are constantly emerging, while others disappear. Since the advent of email, program contact information changes rapidly. The Dip-In simply doesn't have staff for soliciting data each year from every possible program.

Second, we try our best to not burden coordinators with data requests. We certainly don't want them to spend time entering data for 50 or 1000 volunteers at

our website. We do obtain data from programs in the form of Excel or Access databases, but it takes time to change the data into the form used in the database.

Third, and most important, we ask questions that are not asked by other programs. "What is the quality of the water?" "What is the severity of problems on your waterbody?" We don't get, or even want, a coordinator to answer this type of question for the volunteer.

From these questions about quality has come a recognition that there are not only regional differences in transparency, but that these differences are mirrored in distinct regional attitudes about what is meant by "excellent" water quality and what are the most pressing problems confronting volunteers.

Why are volunteer perceptions important? Management of our water resources isn't necessarily just a matter of making rules and decisions based on some theoretical "ideal" quality or even one based on comparisons to "pristine" water quality.

Management should incorporate the

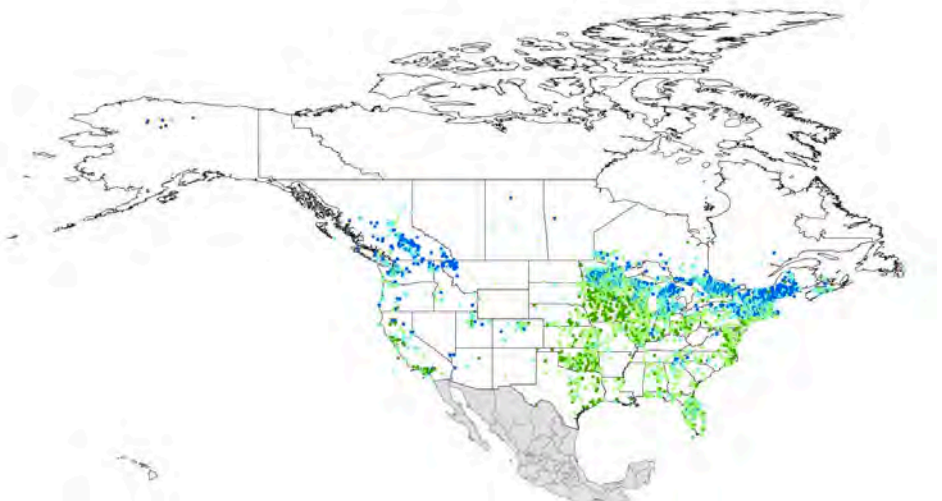
perceptions of the users, and that means understanding what the public consider to be the major problems of their waters. What the Dip-In data has shown us is that volunteers see different problems from what is traditionally thought of as water quality.

So, this is a plea to have volunteers use the website to enter their data. If for any reason the website is too confusing or is unavailable, the downloadable paper form has many of the needed perception questions.

### **Trends and Plenty of Them**

One goal of the Dip-In was to determine if waterbodies are changing. The question is critical to funding agencies as well as to the individuals who live on or use an aquatic resource. For the purpose of our study we combined the Dip-In data with a larger database produced by Dr. Dan Canfield at the U of Florida. This produced a set of data on 4,275 waterbodies with 5 or more years of data, nearly double the information available from the Dip-In alone. Our approach was to examine the trends in transparency in each individual lake.

The results? We found that only a



**The transparency of North American waterbodies. Data gathered by Secchi Dip-In volunteers**

small fraction (17.6%) of the waterbodies was changing significantly (with a 90% chance of being correct). We also found that, of the waterbodies that were changing, almost an equal number (8%) were improving transparency while the other 8% had decreasing transparency.

The surprising news is that the distribution of changing lakes is not uniform across the continent. Most of the changing lakes, both increasing and decreasing in transparency are limited to regions within the boundaries of past glaciations (red or blue lines) or in Florida. The only common denominator between glaciated regions and Florida is that there are more natural lakes in these regions.

Our enthusiasm for a new discovery unfortunately has to be tempered by the unfortunate fact that, outside of the glaciated region and Florida, few states had much data on waterbodies for a minimum of 5 years. Locations where there was an abundance of data were generally where volunteer monitoring programs exist, or existed.

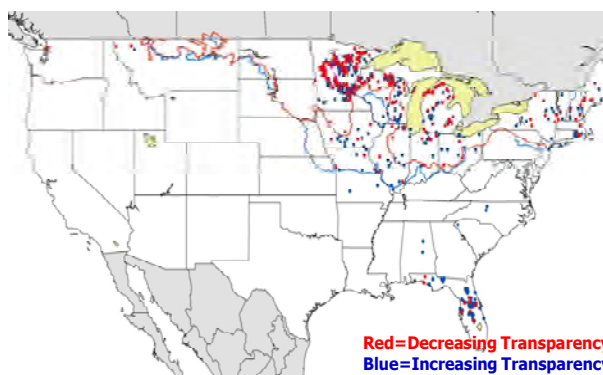
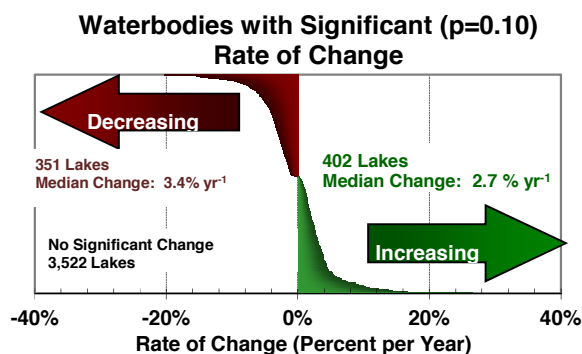
Our preliminary conclusions are that (1) voluntary monitoring programs are an important part of a program's

ability to detect trends in transparency, (2) there are regional differences in waterbodies in transparency, in volunteer attitudes about water quality, and the waterbodies' susceptibility to change, and (3) for successful management, we had better figure out what is involved in producing those regional differences.

### **Don't Forget to Upgrade Your Lake Data**

If you have registered as a volunteer

at the Dip-In website, you have the ability to edit any data you have entered at the site. You can have access to all the information you have contributed by sending me an email. Coordinators can edit any data for any waterbody in their program. You also have the ability to edit the waterbody information presented for your waterbody. You can also add pictures of the site and of activities taking place there. It's your lake or stream and your data. You should have the ability to proudly present it to the world.



## **Dip-In 2013: June29 to July 21**

You are welcome to participate in this year's Dip-In. Data that fills in 5+ years information can be used for trend analysis. See our website at: <http://www.secchidipin.org>.

### **For more Information, contact:**

Bob Carlson

Secchi Dip-In

1091 Munroe Falls Kent Road Kent, OH 44240

E-Mail: [rcarlson@kent.edu](mailto:rcarlson@kent.edu)

# Volunteer Bulletin Board

## **July is Lakes Appreciation Month**

Each year the North American Lake Management Society (NALMS) recognizes the month of July as Lakes Appreciation Month!

Sure, you may work on them, play on them, drink from them and dive into them, but have you recently taken the time to really appreciate your local lake, pond, or reservoir?

With increasing populations, development, and stressors on our waterbodies we really need to take the time to consider where we'd be without water. All life relies on this valuable resource and we often take for granted that these resources will always be there and always be useable.

With a whole month dedicated to Lakes Appreciation, why not take the time to enjoy your local freshwater resources and bring some attention to them, to either extoll their values or initiate action to protect, enhance, or rejuvenate them?

Lakes Appreciation Month is also the ideal time to set aside a week, a day or even just an hour to celebrate your favorite lake, pond or reservoir by participating in one or more of the following activities:

- *Assist with volunteer monitoring activities on your waterbody or in your watershed.*
- *Participate in the annual Secchi Disk Dip-In. More information can be found online at <http://www.secchidipin.org>.*
- *Take a day off and visit a local lake or pond.*
- *Go boating, kayaking, canoeing, sailing or rowing.*
- *Go swimming or SCUBA diving*
- *Go fishing.*
- *Organize a lake or watershed clean-up*

*event.*

• *Go birding or picture taking around a lake or pond.*

• *If you are an artist, draw or paint a lake scene and put it up in your home or office to remind yourself of the great time you had at the lake while you were creating this work of art.*

• *AND Others.....*

## **DEP AND EPA CRAFT SOLUTION FOR SAFER, CLEANER WATER FOR FLORIDA**

**~ Florida's numeric nutrient criteria will cover the vast majority of Florida waterbodies ~**

TALLAHASSEE – The Florida Department of Environmental Protection and the U.S. Environmental Protection Agency reached an agreement to continue the protection of Florida's waterways from excess nitrogen and phosphorus pollution. These pollutants cause algal blooms and are among the largest contributors to water quality problems in Florida. This agreement marks a significant step forward in protecting and restoring water quality across the state.

The agreement builds off of momentum from November, when EPA approved the state's numeric nutrient criteria to cover all lakes, rivers, streams and springs, as well as estuaries from Clearwater Harbor to Biscayne Bay. The Department will move forward with rulemaking and legislation in 2013 to finish the job of setting numeric nutrient criteria for Florida's waterways.

"As a result of continued cooperation, the Department and EPA have developed a joint commitment to clean up Florida's waterways," said DEP Secretary Herschel T. Vinyard Jr. "We can now move forward to implementing nutrient reduction criteria, rather than delaying environmental improvements

due to endless litigation. We all should recognize the dedication of EPA and Department scientists to protecting our waterways. We appreciate their commitment to a sound, long term plan to protect Florida waters."

The plan includes proposing state legislation and adopting additional state rules that, when combined, will eliminate the need for continued dual rulemaking and secure the foundation for a singular, state-led solution for the state of Florida. Currently, state and federal rules are in place for some Florida waterbodies.

The proposed legislation would require the Department to complete its nutrient criteria rulemaking for remaining coastal and estuarine waters by Dec. 1, 2014, and establish interim nutrient standards until then. The legislation would further codify requirements for nutrient conditions in all managed conveyances and canals, and makes it clear that all state criteria will go into effect when EPA removes the federal criteria and ceases future rulemaking.

"Clean water is vital to Florida's future. The health and growth of Florida's economy, and the jobs that go with it, depend on high quality and sustainable sources of water," said Sen. Charlie Dean. "We expect this legislation to be part a strong, effective framework for protecting and restoring waters which are vital to the economic and environmental health of Florida. Secretary Vinyard's leadership is instrumental in getting the water right." "There is not a bigger challenge or more important issue to address than nutrients, if we are to restore and protect the health of our rivers, lakes, springs and estuaries," said Rep. Matt Caldwell. "Measurable nutrient criteria will result in cleaner, safer water for all Floridians."

# Florida Natural Estuary Programs Host King Tide Photo Exhibit



King High Tide at Siesta Key.



Larry Stultz

**SARASOTA, FL** – The Sarasota Bay Estuary Program (SBEP) and Tampa Bay Estuary Program have partnered to present *Chasing the Waves*, an exhibit of photos showing king high tides. The free exhibit opened Thursday, June 6 in downtown Sarasota at the Federal Building located at 111 S. Orange Avenue. The public was invited to attend the opening night reception from 5:30 to 7pm. The photos will be on display through July before traveling to other venues in Sarasota, Manatee, Hillsborough, and Pinellas Counties.

The goal of the exhibit is to raise awareness about the impact of sea level rise. Images include winning submissions to the King Tide Photo Contest held last year. The exhibit will also include

photos from other locations in the U.S., Australia, and small Pacific Island nations.

The current schedule includes the Federal Building in downtown Sarasota through June, Mote Marine Laboratory in July and August; South Florida Museum in Bradenton in September and

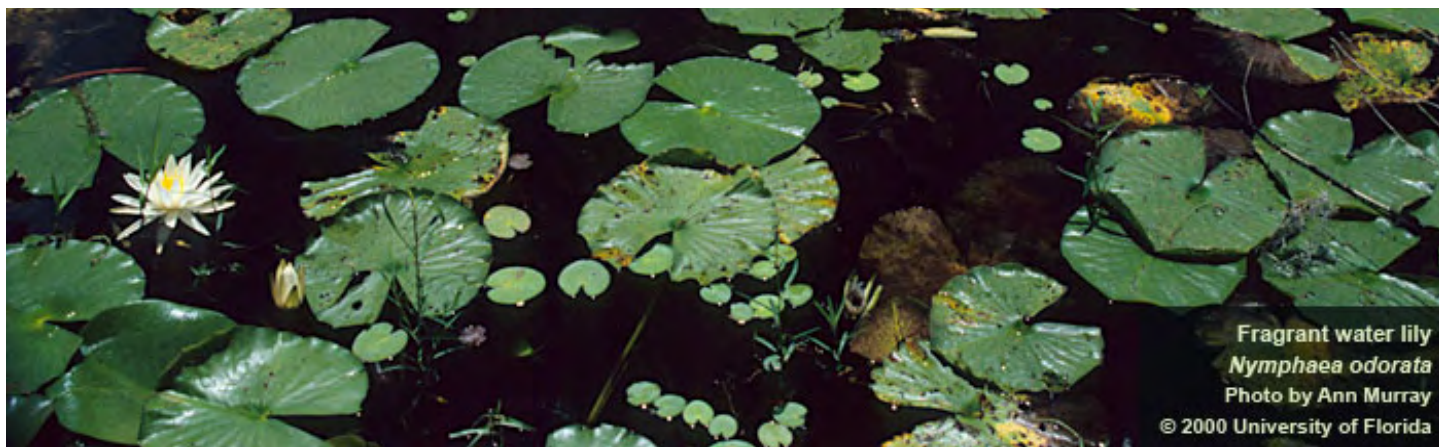
October; the Sarasota Bay Water Festival on Saturday, November 2 at Ken Thompson Park; Weedon Island Preserve in St. Petersburg Nov 4-30 and Robinson Preserve in Bradenton in January and February 2014. Visit [SarasotaBay.org](http://SarasotaBay.org) for the current schedule and venue information.



Viewing the Exhibit

Sara Kane

*The Sarasota Bay Estuary Program is dedicated to restoring the area's greatest natural asset—Sarasota Bay. Its unique program strives to improve water quality, increase habitat and enhance the natural resources of the area for use and enjoyment by the public. Sarasota Bay is one of 28 estuaries in the United States that have been named by the U.S. Congress as an "estuary of national significance." Partners include Sarasota County, Manatee County, City of Sarasota, City of Bradenton, Town of Longboat Key, Florida Department of Environmental Protection, Southwest Florida Water Management District, and the U.S. Environmental Protection Agency.*



## Welcome to the Center for Aquatic and Invasive Plants (CAIP) Information Office

The Center was established by the Florida legislature in 1978 and serves as a multi-disciplinary research, teaching, and extension unit directed to: develop environmentally sound techniques for the management of aquatic and natural area weed species; coordinate invasive aquatic plant research; and provide education and outreach about the impacts and management of invasive plants.

Utilizing expertise from many departments within UF/IFAS and its Agricultural Research and Education Centers around the state, much of our outreach is disseminated through the following web sites:

- <http://plants.ifas.ufl.edu>

CAIP's main web site has been online since 1995 and includes news about aquatic plant management, links to special projects, educational publications, field guides, photographs and information on more than 500 plant species.

- <http://plants.ifas.ufl.edu/manage>

Provides a comprehensive overview of aquatic plant management in Florida freshwater environments. Visitors gain an in-depth look at the many factors taken into account by plant managers who must keep

invasive plants at low levels while also protecting Florida's unique aquatic habitats.

- <http://plants.ifas.ufl.edu/education>

Developed for educators, this web site provides the resources needed to teach our next generation about the harmful impacts of invasive plants and issues related to natural resource management. The Center worked with dozens of teachers around the state to develop core presentations, hands-on lessons and activities, all of which correlate to the Florida Sunshine State Standards (and are soon to be correlated to national Common Core State Standards).\*

- <http://plants.ifas.ufl.edu/APIRS>

A searchable bibliographic database with nearly 85,000 annotated citations for scientific articles and reports on aquatic, wetland and invasive plants. Unlike many other databases, this one is free!

Additionally, we produce a variety of educational publications, field guides, audio-visual programs, photo displays/murals, and learning activities. As you work to learn more about Florida's environment, we invite you to use our information services and resources.



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## Florida LAKEWATCH



This newsletter is generated by the Florida LAKEWATCH program, within UF/IFAS. Support for the LAKEWATCH program is provided by the Florida Legislature, grants and donations. For more information about LAKEWATCH, to inquire about volunteer training sessions, or to submit materials for inclusion in this publication, write to:

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1-800-LAKEWATCH (800-525-3928)  
(352) 392-4817  
E-mail: [fl-lakewatch@ufl.edu](mailto:fl-lakewatch@ufl.edu)  
<http://lakewatch.ifas.ufl.edu/>

All unsolicited articles, photographs, artwork or other written material must include contributor's name, address and phone number. Opinions expressed are solely those of the individual contributor and do not necessarily reflect the opinion or policy of the Florida LAKEWATCH program.



<http://myfwc.com/wildlifehabitats/invasive-plants/>

*Materials produced or compiled by the Center for Aquatic and Invasive Plants Information Office are the result of a longstanding partnership between the UF/IFAS CAIP and the Florida Fish and Wildlife Conservation Commission, Invasive Plant Management Section*

<http://plants.ifas.ufl.edu>