

LAKEWATCH's 2015-2016 Budget Gets a Well Needed/Deserved Boost

By Mark Hoyer, LAKEWATCH Director



LAKEWATCH

The Florida LAKEWATCH staff at a staff meeting in Gainesville.

Thanks to support and leadership from Mary Ann Gosa-Hooks IFAS/University of Florida Director of Governmental Affairs and State Representative Carey Pigman, Florida District 55, Florida LAKEWATCH received a legislative increase in this year's budget. These monies are vital to the

program that serves stakeholders in 57 Florida Counties. Once again the ultimate thanks goes to the hundreds of volunteers who dedicate their time and resources sampling Florida's aquatic systems so that we have accurate information to better manage Florida's valuable aquatic re-

sources.

Line item 1637 in the Florida 2015-2016 budget, directs \$500,000 to Florida LAKEWATCH for operations. We believe the State Legislature made an excellent investment. Using LAKEWATCH activities conducted

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in 2014 will show current and estimated future values to the State of Florida. In 2014 monthly samples were collected on 749 systems including 474 lakes, 144 near-shore coastal sites, 125 river sites and 5 springs.

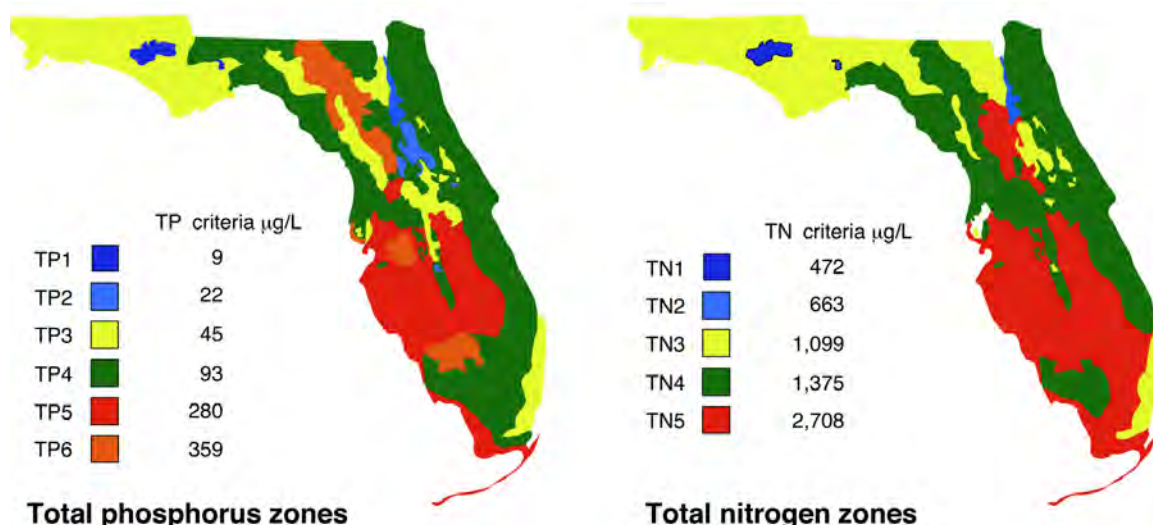
- For these systems, LAKEWATCH volunteers made approximately 5,900 sampling trips. Each trip took approximately 2.5 hours and the Hands on Network* estimated that volunteer labor is worth \$23.14 yielding a total of approximately \$340,000 volunteers contributed to the State of Florida (this is not counting travel/sampling costs also donated to the state).
- LAKEWATCH laboratory personnel analyzed approximately 13,000 water samples for total phosphorus, total nitrogen, chlorophyll and phaeophytin concentrations (all needed by FDEP for

evaluating compliance with the new EPA approved Numeric Nutrient Criteria). A conservative estimate for the cost of running one parameter in a National Environmental Laboratory Accredited Certified (NELAC) laboratory is \$25.00 per sample. Thus, the LAKEWATCH laboratory processed approximately 1.3 million dollars worth of samples for the State of Florida.

- Each year Florida LAKEWATCH holds 20 Regional meetings that are located around the whole state, inviting all active volunteers (currently approximately 700). At these meeting each volunteer receives water quality data that they have collected and LAKEWATCH staff describe what the data mean and staff field questions on all aspects of aquatic resource management. These meeting are instrumental in edu-

cating Florida stakeholder (University of Florida Extension) and increasing their stewardship of the Florida's natural resources.

- In the last decade Florida LAKEWATCH staff have published 35 peer reviewed scientific articles on many aspects of Florida's aquatic resources (University of Florida Research). In 2012 three publications were produced using the entire LAKEWATCH data base (1986-2012) that helped shape FDEP's approach to implementing the new EPA approved Numeric Nutrient Criteria. These publications helped determine if lakes are meeting their designated uses and define background nutrient concentrations based on Ecoregion of the state. The definitions of background nutrient concentrations are also incorporated into the Numeric Nutrient Criteria.



Total Phosphorus zones and total nitrogen which helped determine if lakes are meeting their designated uses and define background nutrient concentrations based on Ecoregion of the state.

* For more information, see (<http://www.handsonnetwork.org/tools/volunteercalculator>)

Do You Have an Issue with Aquatic Vegetation?

By Matt Phillips, Florida Fish and Wildlife Conservation Commission

If you have ever lived on a waterbody in Florida it is inevitable that you will eventually have an issue with aquatic vegetation that may impact your uses and function of that water. Many times it is caused by the overgrowth of invasive exotic vegetation that is not native to our waters and disrupts our uses of the system not to mention the native habitats common to our shorelines. Sometimes you may have problems with native vegetation that for whatever reason has blocked your access to the open water or somehow prevented you from being able to use a lake front for your intended purpose. In many public waters, those that have a public boat ramp, there is a state



Hydrilla was an "issue" on Lake Baldwin in Orange County back in the 1970's.

funded program for the control of invasive exotic plants that controls many category I and II inva-

sive plants. This program addresses the maintenance of exotic plants and the general access

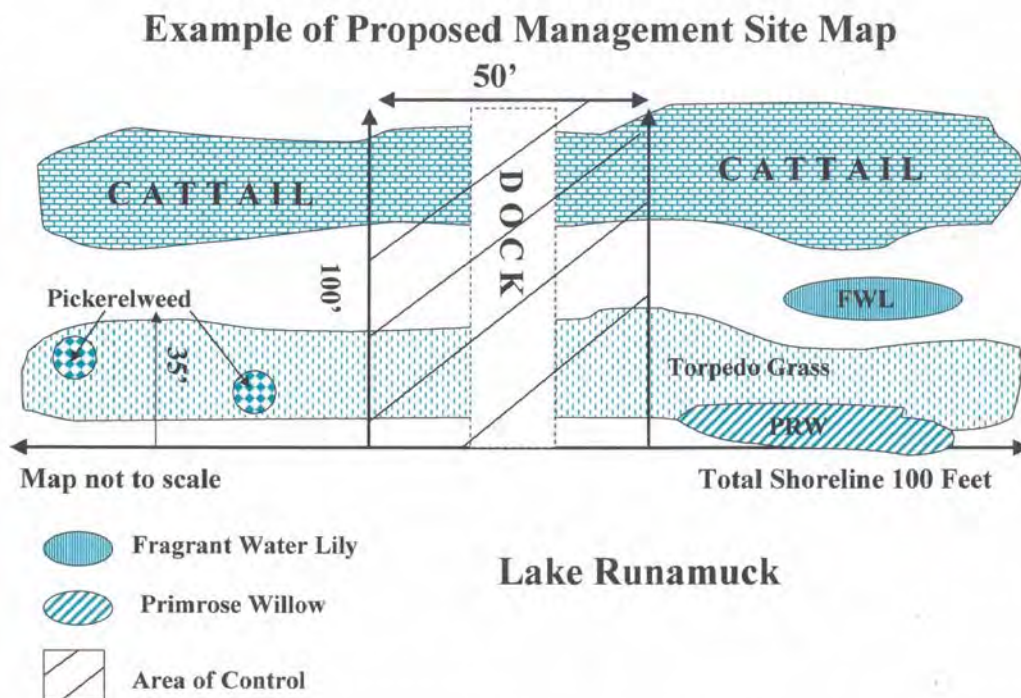


Figure 1. Diagram of a generic lake that is not an outstanding waterbody or an aquatic preserve showing the legislative exemption allowing a riparian owner to control aquatic vegetation in an access corridor.

and navigation for the public but it does not always address individual's needs to access open water from their respective properties.

In order to protect our native plant communities and still allow individuals access to waterbodies from their private properties, a permitting process was developed. Florida Statutes (FS) 369.20 and Florida Administrative Code (F.A.C.) 68F-20 provide the guidance for anyone wishing to control or manage aquatic plants in the state of Florida. As with many statutes and rules, for the layperson they may seem complicated to follow. This is an attempt to summarize these rules and give a very general guidance on controlling vegetation on your shoreline.

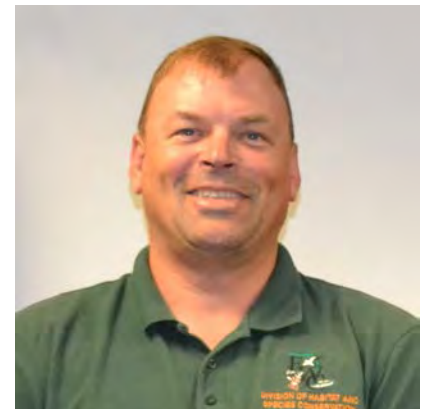
On a generic lake which is not an Outstanding Florida Water (OFW) as designated in Chapter 403 FS or an aquatic preserve as designated under chapter 258 FS, there is a legislative exemption that would allow a riparian owner to control aquatic vegetation in an access corridor along 50 feet or 50 percent of their shoreline, whichever is less, by hand or mechanical means (figure 1). Any plant control with an herbicide must be permitted by the Florida

OFFICE NAME & LOCATION	ADDRESS	PHONE NUMBER
Northwest, Bay County	3911 Highway 2311, Panama City 32404	(850) 510-1224
Suwannee River, Columbia Co.	3377 E US 90, Lake City 32055	(386) 758-0525
North Central, Lake County	601 W. Woodward Ave., Eustis 32726	(352) 357-2951
Southwest, Citrus County	8275 E. Fort Cooper Rd., Inverness 34450	(352) 726-8622
St. Johns River, Orange County	6830 Shadowridge Dr., Orlando 32812	(407) 858-6170
South Central, Polk County	2001 Homeland-Garfield Rd, Bartow 33830	(863) 534-7074
South Florida, Martin County	18150 SW Martin Hwy., Indiantown 34956	(772) 597-5462
Everglades, Collier County	298 Sabol Palm Rd., Naples 34114	(239) 229-5403

Table 1. Contact information for your nearest FWC, Invasive Plant Management regional biologist.

Fish and Wildlife Conservation Commission (FWC) and there is an online permitting system where applicants can apply for their permit at myfwc.com or follow the link at the bottom of this page.

Most sites are permitted on a case-by-case basis, if you have specific questions regarding plant control on a specific waterbody or area you can contact your nearest FWC, Invasive Plant Management regional biologist (Table 1) and they can help you identify your plant problem, recommend treatment options and navigate the regulatory process.



Matt Phillips is a Biologist with the Florida Fish and Wildlife Conservation Commission's office in Tallahassee. Photo: FWC media.



Any plant control with an herbicide must be permitted by the FWC and there is an online permitting system where applicants can apply for their permit at myfwc.com or follow the link:

<https://public.myfwc.com/CrossDOI/PermitSystem/loginForm.aspx?ReturnUrl=%2fCrossDOI%2fPermitSystem%2fDefault.aspx>

Search for Rare Native Florida Fishes

By Travis Tuten, Florida Fish and Wildlife Conservation Commission

The Bluenose Shiner (*Pteronotropis welaka*) is a member of the family Cyprinidae, which is the largest family of freshwater fish in the world and includes other fish that occur in Florida such as the native Golden Shiner (*Notemigonus crysoleucas*) and introduced Grass Carp (*Ctenopharyngodon idella*). It attains a maximum length of 2 to 2 ½", has a slender and compressed body, pointed snout, and a dark lateral stripe from the snout to the caudal fin. The Bluenose Shiner attains its name because adults of both sexes will develop blue pigment on their snouts during the breeding season. However, males will develop a much brighter cerulean blue covering a larger area of the snout when compared to females. Mature males will also develop enlarged dorsal, anal, and pelvic fins with black pigmentation during the breeding season. Another identifying trait is the regular appearance of gold or silver colored flecks on the sides of the body (Figure 1).

Bluenose Shiners range from Central Florida to the Pearl River Basin at the Louisiana/Mississippi border, and as far north as Central-West Alabama. They are typically found in slow moving areas of vegetated streams with a variety of water clarities, but many of the locations they have been collected in Florida are spring dominated. This species was first described from individuals captured at the St. Johns River in Putnam County near Welaka, Florida in 1897. Bluenose shiners have since been found in multiple locations throughout the St. Johns River Basin



Figure 1. Photo of an adult male Bluenose Shiner captured in the Escambia River Basin. Photo Credit: Howard Jelks, USGS

including Rock Springs Run and Wekiva River in Orange, Seminole, and Lake Counties, at Alexander Springs Run and the mouth of Juniper Springs Run in Lake County, and at two locations of the Ocklawaha River in Marion and Putnam Counties. The St. Johns River Basin population of Bluenose Shiners is isolated from the next known population in the Apalachicola River Basin, Florida by more than 200 miles. This is actually one of four Florida fish species that have an isolated population in the St. Johns River Basin, with the next closest known population being over 200 miles away. The other three species include Southern Tessellated Darter (*Etheostoma olmstedii maculaticeps*), Snail Bullhead (*Ameiurus brunneus*), and Ironcolor Shiner (*Notropis chalybaeus*). Bluenose Shiners have been collected throughout the Florida Panhandle in the Apalachicola and Choctawhatchee River Basins, and in multiple tributaries of the Pensacola Bay.

The Florida Fish and Wildlife Conservation Commission (FWC) is the

state agency in charge of managing Florida's fish and wildlife resources for their long-term well-being and the benefit of people. FWC is currently working on a number of cooperative projects with University of Florida geneticists and U.S. Geological Survey biologists that involve some of Florida's rare freshwater species. For one of these projects, we are trying to identify how similar the St. Johns River population of Bluenose Shiner is from the populations in the Florida Panhandle and from populations in other states. We currently have collected samples from throughout their range, but the knowledge of new locations of rare fish in Florida is always helpful. Considering that they are often associated with spring dominated streams in Florida, there is a chance that they could be seen while snorkeling in a clearer system. If you think you have observed or collected an individual, please try to take a picture of it and contact FWC biologist Travis Tuten at travis.tuten@myfwc.com. Thank you for your help!

Swimmer's Itch: A Very Personal Case Study

Emma N. I. Weeks



Figure 1. The field site complete with 12 limnocorrals containing hydrilla. There are four different treatments, each replicated three times. Note the common moorhen family swimming on the bottom left; waterfowl are the main host of the parasite that causes swimmer's itch. Credit: Emma N. I. Weeks, UF/IFAS.

This summer I have spent a lot of time in and around ponds whilst completing experiments to test combinations of methods for hydrilla integrated weed management as part of a project funded by the United States Department of Agriculture (NIFA-CPPM program; **2014-70006-22517**). The experiments are established in limnocorrals in ponds at the UF/IFAS Center for Aquatic and Invasive Plants. Limnocorrals are floating experimental units that allow us to split up the ponds and test different treatments in one area (Fig. 1). Unfortunately, I recently found out why a wetsuit is better than waders when working in deep water. My waders kept filling with water, so eventually I abandoned them to complete the work in my shorts and T-shirt. It was not until later as I was drying off that I noticed a rash on

each of my legs and arms. At first I thought it was just an irritation from the plants or water, but later as it got worse I realized it was something more interesting...swimmer's itch!

What is swimmer's itch?

Swimmer's itch or cercarial dermatitis is a skin rash caused by infection with a parasitic worm that usually infects birds and other vertebrates in the U.S. In other countries, there are species that infect humans as their main host and cause a disease known as schistosomiasis (in this article, I will not cover this disease in any detail). In the U.S., humans are an accidental host of this parasite, and although the rash is uncomfortable, the worms cannot develop or cause disease in humans.

What causes swimmer's itch?

Parasitic flatworms in the family Schistosomatidae cause swimmer's itch. There are several different species that cause swimmer's itch in humans in the U.S., and they all normally parasitize other vertebrate species, especially waterfowl. The parasite's life cycle includes a stage in an aquatic snail species (Fig. 2). The snail is infected by a free-swimming stage known as a miracidium; inside the snail, the parasite replicates and then leaves the snail as another free-swimming stage, the cercaria. These cercariae search for a vertebrate host, which is usually a water bird, to complete the next stage of the life cycle. They penetrate the skin, usually of the foot, and once inside the vertebrate host, the worms mature, mate and migrate through the circulatory system to the veins surrounding the gut,

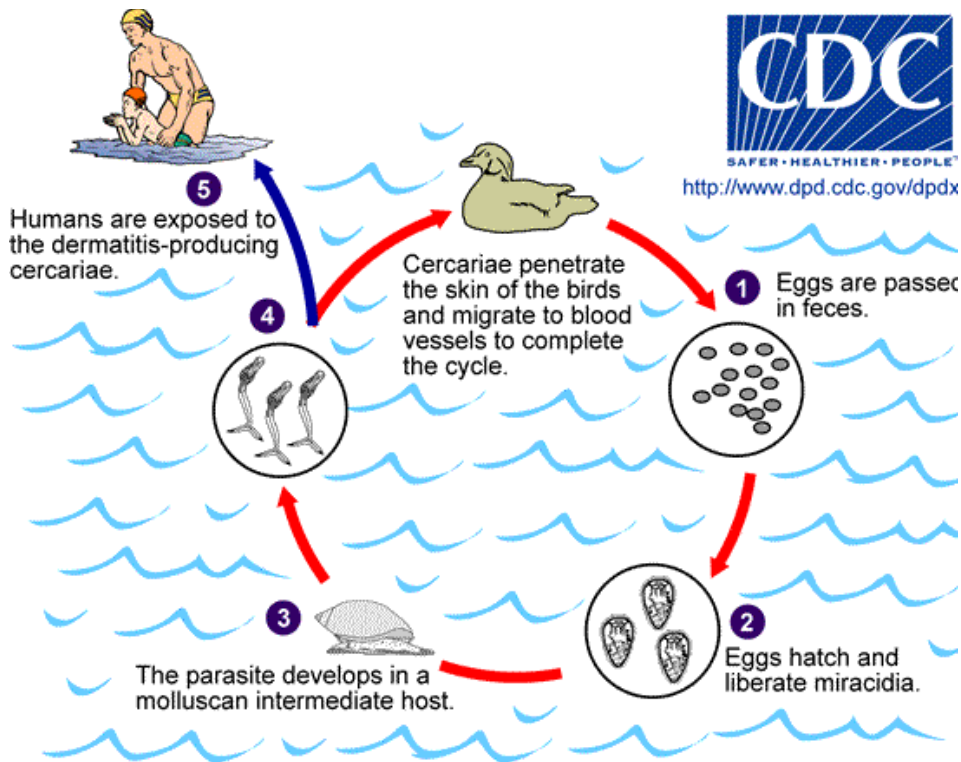


Figure 2. Life cycle of the parasites that cause swimmer's itch. Credit: Centers for Disease Control and Prevention (CDC).

where they lay eggs. The eggs make their way into the gut, where they are expelled when the bird defecates into the water, where miracidia hatch from the eggs and the life cycle continues. The parasite may be present wherever its snail and vertebrate hosts are present in fresh or brackish water.

Why do humans get infected?

The cercariae (Fig. 3) are searching for a host, which is usually a water bird and sometimes another vertebrate that lives in close association with water, but occasionally the host is an unsuspecting person swimming or wading in the water. The cercariae penetrate the skin of the human but soon die because the host is incompatible. Unfortunately, this is not the end of the problem, because our immune systems attack these foreign bodies causing an inflammatory reaction that can be very itchy

and uncomfortable — this is swimmer's itch.

How do you know if you have swimmer's itch?

When you dry off, the skin may tingle and the rash will appear shortly after swimming (within 12 hours). The red spots will get redder and become itchier as time progresses before eventually subsiding (Fig. 4). Each red spot is the site where a single cercaria (immature worm) penetrated the skin. A small papule (pimple) will appear at each penetration site. The degree of discomfort varies between individuals, with repeated exposures usually resulting in more intense reactions. Swimmer's itch can be mistaken for a poison ivy reaction. However, the rash caused by the parasitic flatworms results in small raised papules, whereas that caused by poison ivy usually results in fluid-filled blisters. Chigger bites and seabathers



Figure 3. A schistosomal cercaria (150× magnification). Credit: Centers for Disease Control and Prevention / Minnesota Department of Health, R. N. Barr Library; Librarians Melissa Rethlefsen and Marie Jones, Prof. William A. Riley.

eruption (caused by small jellyfish) may also be misdiagnoses. However, in both of those cases, the bites or stings from the organisms will be mainly around the edges of clothing. In swimmer's itch, the papules are usually on areas of exposed skin and not on areas of skin that were covered by tight-fitting garments. In my case, my lower legs and arms from my elbow to wrist were covered with papules, but the areas that had been covered by my shorts and T-shirt had none.

How to treat swimmer's itch?

As the parasites will be killed by your immune system, it is only necessary to treat in order to reduce discomfort due to the rash. Avoid scratching the rash (easier said than done!), because breaking the skin may result in secondary infections. Over-the-counter anti-itch medications, such

as lotions and anti-histamines, will work well to control the symptoms. Your pharmacist should be able to recommend something suitable to help ease your symptoms if necessary.

How to avoid swimmer's itch?

Swimmer's itch is not that common because the parasites that cause it are species specific. In order for a swim in a body of water to result in swimmer's itch, the correct invertebrate (snail) and vertebrate (e.g., duck) host species must be present. Even if all the right species are present, the number of cercariae present may not be enough to cause swimmer's itch when you enjoy a swim in your favorite lake. However, if the lake has abundant snails (usually associated with aquatic plants such as hydrilla) and many aquatic birds, the probability of having

swimmer's itch cases increases. In this situation, the following steps can minimize the risk of a swimmer's itch problem:

- Do not swim in shallow water for long periods of time — these are areas where the snails are present and the water birds wade, so they may have high concentrations of cercariae.
- Rinse and dry off immediately after getting out of the water — some species penetrate as the water dries on the body.
- Avoid swimming on sunny warm days in the mornings — laboratory-based studies showed that cercariae were shed most rapidly from snails at these times.

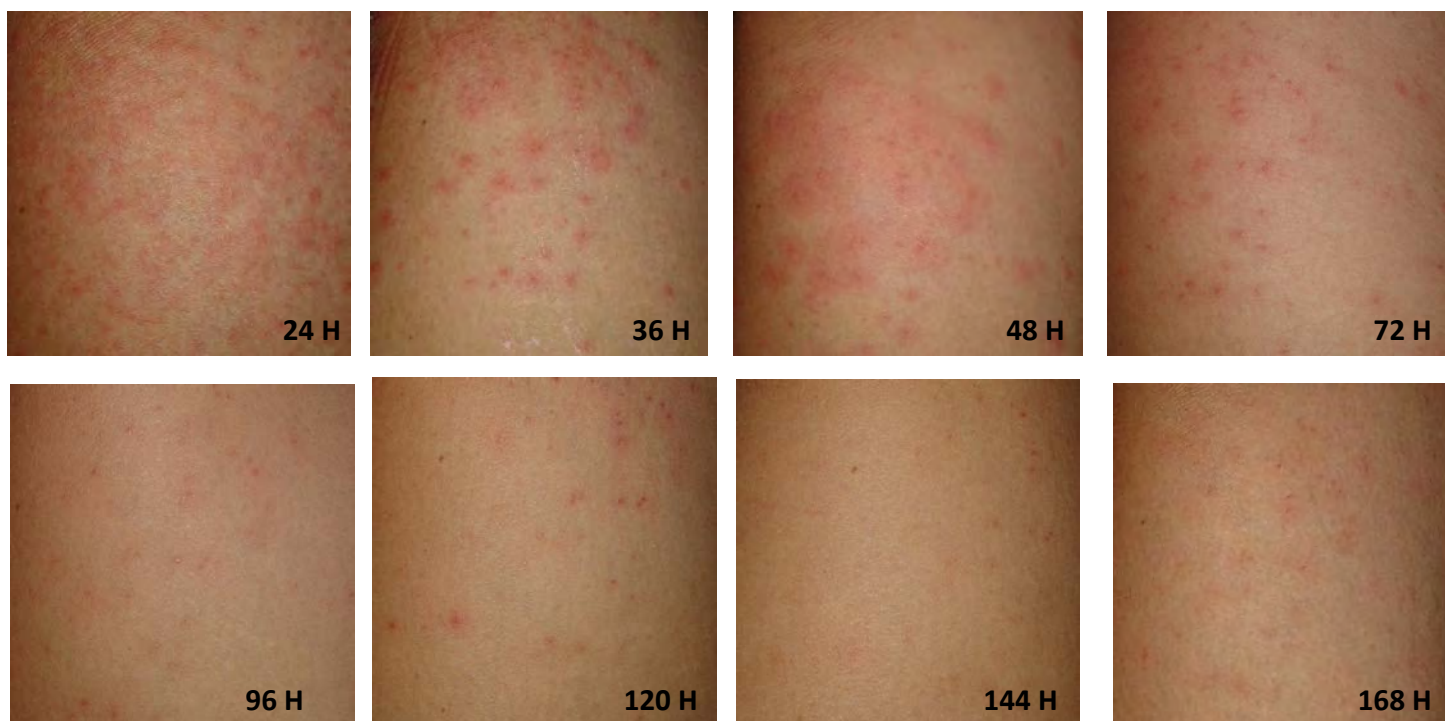


Figure 4. The development of the swimmer's itch rash over a week (168 hours), a case study. Credit: Emma N. I. Weeks, UF/IFAS.

Dr. Emma N. I. Weeks is an Assistant Research Scientist with the Department of Entomology and Nematology at the University of Florida's Institute of Food and Agriculture Sciences and is currently working with the UF/IFAS Hydrilla IPM Project.



Working Together to Protect Seminole County Watersheds

By Dr. Beth Stephens, Seminole County SERV Coordinator

Protecting Seminole County's watersheds is a big job – from monitoring water quality and biodiversity, to managing waterway restoration activities, to providing public education on watershed awareness and ecosystem conservation. It takes a dedicated team, with a very collaborative approach, to manage this. Fortunately, the synergistic work of the Surface Water Quality Program, the Lake Management Program, and the Seminole Education Restoration and Volunteer (SERV) Program make this possible! These programs (along with Mosquito Control) comprise the Watershed Management Division of Seminole County Public Works. Every component of this Division strives to engage the citizens of Seminole County by inspiring stewardship of aquatic resources, and promoting understanding of scientific methodologies.

The Surface Water Quality Program was initiated in 1997 to meet federal and state National Pollution Discharge Elimination System (NPDES) stormwater permit and the Total Maximum Daily Loads (TMDL) regulatory requirements. The mission of the Surface Water Quality Program (WQP) is to monitor, protect, and restore the quality of surface waters in Seminole County. This is achieved through coordinated water chemistry and biological monitoring programs, providing formal water resource assessments, public education, and by providing technical as-

sistance to residents, other agencies and local governments.

Long term monitoring and biological assessments are used to analyze the health of County waterbodies and determine whether they have declining, stable, or improving water quality trends. The WQP regularly monitors 77 waterbodies for water chemistry (such as total

nitrogen, total phosphorus, chlorophyll) and/or biology (vegetative or aquatic macroinvertebrate bioassessments), and monitors 125 waterbodies monthly for hydrologic data. In addition, meteorological data collected from 12 weather stations, located in each of the major watersheds, is used for both watershed assessments and emergency management purposes. All of this information is stored in the Seminole Watershed Atlas (<http://www.seminole.wateratlas.usf.edu/>), which is a user-friendly, online database and repository of water resource data and stormwater educational information accessible to the public.

The science-based Lake Management Program (LMP) was initiated in FY 2006/07 primarily to address the regulatory requirements of the state and federal TMDL Program of the Clean Water Act. The overall goal of the program is to achieve regulatory compliance through the restoration of "impaired" waterbodies to their natural state, meeting their designated uses (i.e. recreational waters that are "fishable", "swimmable",



Seminole County personnel Marianne Pluchino and Gloria Eby conducting biological assessments on a stream in Seminole County. Photo credit: Seminole County.

and support diverse ecosystems). The program works directly with lakefront homeowners and homeowner associations. The LMP concentrates efforts on in-lake bioassessments and restorations, integrated hydrilla management plans, and education. Education is critical for citizen awareness and the protection of our watershed. In order to teach citizens about their contributing role in nutrient reduction and the benefits of native aquatic plants, the contracted SERV and Florida Yards and Neighborhoods (FYN) Programs provide an extension service for these waterbodies.

The LMP also provides technical assistance and oversight to the County's Municipal Service Benefit Unit (MSBU) Program for 15 individual aquatic weed control MSBUs, which includes providing treatment prescriptions and vendor management for the execution of the recommended activities. In addition, a narrative report is provided to citizens and stakeholders detailing inspection observations, treatment

updates, and educational information.

The SERV Program complements and extends the above efforts of the WQP and LMP Programs. The mission of the SERV Program is to actively restore, preserve, and protect the waterways and natural areas of Seminole County through education and volunteer restoration projects. This program utilizes volunteers to assist with a variety of restoration activities, including planting native vegetation along lakeshores, removing invasive plants, litter clean-ups, and stormdrain marking, as well as educational outreach efforts. SERV Volunteer activities can be one day service projects, or longer commitments such as the Seminole County [Adopt-A-Road](#) and [Adopt-A-River Programs](#). SERV also connects lake residents to the LAKEWATCH Program so that they can assist in monitoring water quality! All volunteer



Geneva Cub Scout Pack 837, SERV Stormdrain marking volunteers. Photo credit: Seminole County

activities are quantified and included as part of Seminole County's compliance with the NPDES/TMDL regulatory requirements.

Volunteers are highly valued component of the operations of the SERV Program, and they have been crucial to improving the health of Seminole County's rivers, lakes, and streams. Since the program was ini-

tiated in 2010, over 9,000 wonderful volunteers have contributed over 28,500 hours of their time to SERV activities. This program is open to all individuals and groups interested in helping to preserve and protect their watershed and local environment. Many local groups have helped to achieve SERV restoration goals, including universities and colleges (University of Central Florida, Seminole State College, Valencia College), Seminole County Public Schools and private schools, community groups such as Rotary Club, Optimist Club, Boy Scouts, Girl Scouts, church groups, environmentally focused groups such as Keep Seminole Beautiful and the Surfrider Foundation, as well as individuals and families. To read about upcoming SERV activities and see activity photos, please visit the web at:

<http://www.seminolecountyfl.gov/serv>, [Facebook](#), [Twitter](#), and [LinkedIn](#).



"I think it's a great way to give back to the community and also meet great people who want to make a difference (quote and photo by Bernise Santiago, SERV Lake Restoration Volunteer)."

Bear Lake Youth Ecology Group Receives Recognition

By Daniel Walls



LAKEWATCH Director Mark Hoyer (far left) and Regional Coordinator David Watson (far right) with Bear Lake Youth Ecology members Scott & Chase Morell as they display their recognition from the President of the United States Office at the Seminole County volunteer appreciation meeting in July.

The Bear Lake Youth Ecology group started with the thought that if we try to do some effort to keep, or improve the quality of this beautiful lake we live on, it will be a good thing. It made it so much easier for us since Bear Lake already had a well established association that was dedicated to maintaining the lake's quality...the Bear Lake Preservation Association. So with the help of Nancy Dunn, we learned how the process worked for LAKEWATCH. Nancy showed us the process used for measuring

lake quality and clarity. Then we went through the formal training

to become certified LAKEWATCH volunteers. Since then, we all try



Florida LAKEWATCH Regional Coordinator David Watson certifying the Bear Lake Youth Group to sample Bear lake in Seminole County. Photo Credit: Nancy Dunn, Bear Lake Volunteer.



Daniel with his mom Sherri Walls displaying the recognition from the office of the President of the United States.

to help Nancy every chance we get.



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:

Florida LAKEWATCH
Fisheries and Aquatic Sciences
School of Forest Resources and Conservation
PO Box 110600
Gainesville FL 32611-0600

or call
1-800-LAKEWATCH (800-525-3928),
(352) 392-4817,

E-mail: flakewatch@ufl.edu,

Website: <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.

Last October, we were nominated for the Presidential Environmental Youth Award (PEYA). This award is issued by the Environmental Protection Agency each year to recognize special efforts made by young people to preserve our environment. "Though our team didn't win the big prize for our region, we still received recognition from the Office of the

President of the United States for our work", said Daniel Walls. The group includes myself, along with Chase and Scott Morell, Nathan Eyal, Parker Brown, and Jesse Albert.

It has been such a pleasure to help Mrs. Dunn, and winning the regional PEYA award was an added bonus. I am headed to UCF this fall, but I hope that Scott, Chase and some of the others will carry on the LAKEWATCH volunteer efforts for our group.



Daniel receiving his "Red LAKEWATCH Hat" from long time Bear Lake volunteer Nancy Dunn.