FLORIDA LAKE MANAGEMENT SOCIETY

Volume 14 No. 3 Winter 2002

Free Family Foundation Supports FLMS for a Second Year

The Free Family Foundation has agreed to provided FLMS a $10,000 grant for the second straight year. This grant increases the FLMS Love-Your-Lake cost-share program for this year to $14,000. Do you have a lake restoration project that could use some financial support? Check out the FLMS website for details on applying for the cost-share and see information on past recipients.

Board Recommends Changes to By-Laws

The Board is considering changes to the By-Laws to improve the operational efficiency of FLMS. These changes will be considered at the annual business meeting. The first change allows for greater flexibility in the committee assignments within the Board. The second change would allow the Board to explore and implement means other than paper ballots for conducting FLMS elections. The third would remove the two-year term limit from the treasurer position. To see the text of the proposed changes, check out the FLMS website.

In This Issue

FLMS 2002 Conference Information

Call For Papers

Annual Conference will he held June 10 – 14, 2002 at the Naples Beach Hotel & Golf Club. The Board is looking forward to another productive conference. The sessions currently being developed include:

Ecology and Management of Cyanobacterial Blooms	Bacterial Indicators in Florida Lakes	Fish and Wildlife Studies
Effects of Water Level Fluctuation on Aquatic Macrophytes	Methods of Lake Restoration	TMDLs
Exotic and Invasive Species (plants and animals) in Florida Waters	Water Quality / Water Quality Modeling	Watershed Action for Lake Remediation

FLMS will conduct three workshops in conjunction with the Annual Conference. The workshops will be held on Monday and will provide classroom and hands-on field training in three areas: (1) Surface water physical and chemical monitoring; (2) Surface water biological and special parameter monitoring and plant identification; (3) Stream, Pond and Lake Restoration. The first two workshops are designed to provide the attendees with training in state-of-the-art monitoring techniques, and equipment. The second workshop will provide training on various lake and pond restoration techniques and include a discussion of successful and failed restoration efforts. All three workshops will feature field training. Each workshop will have a student capacity of 20. Early registration is advised.

Check your calendar and start thinking about your presentation. Papers that are fresh, contain timely or valuable information, properly formatted, and in tune with the final agenda will have the best chance for selection. Initial 250 word abstracts will be due March 1, with extended abstracts for the proceedings to follow. Watch the FLMS website for abstract submission details.

Please submit your brief abstract by e-mail, preferably as an attached Word file, to Larry Battoe, Program Chair: e-mail address: Lbattoe@SJRWMD.com. Please use 250 words or less and use the following format (e.g.):

Abstract Format Sample

A New Method for the Preparation of Abstracts for Oral Presentation by Sam SecchiDisk*, Asst. Prof. University of Ochopee, Oshkosh, Florida 33333 and Jim Grabsample, Sr. Proj. Manager, WeDoItAll, Inc., Frozen Sneakers, Nebraska, 01011

Briefly describe the presentation you wish to make and the basic content. Just give the germinal information. Use an economy of words. State the Principle objective, very briefly describe methods, summarize results, and state principle conclusions. This abstract will be used to select papers for presentation and for accepted papers, the abstract will be published in the proceedings available at the meeting. Papers that are fresh, contain timely or valuable information, properly formatted, and in tune with the final agenda will have the best chance for selection. Please use 12 pitch type and Arial font if available. For multiple authored papers, please identify the author presenting the paper with an asterisk.

Board of Directors' Meetings

The FLMS Board of Directors has established the following schedule of meetings for 2001-2002. The meetings are open to all FLMS members. Any FLMS member is invited to attend to view the Society in action or provide input on current issues.

Meetings are held at the Reedy Creek Improvement District office at Disney and begin at 11 am. For specific directions, contact any Board member. The next meetings are on Feb 22, April 5 and May 17.

Stormdrain Plaques For Sale?

The FLMS board is exploring whether it is possible to continue helping provide various groups with high-quality aluminum stormdrain plaques. These two-color plaques are 5 by 10 inches. These plaques help make it clear that what goes down a storm drain may have unintended negative impacts on nearby lakes.

The Board is discussing with various manufacturers of these plaques. If your group is interested in ordering at least 500 plaques, contact Rick Baird at (407) 836-6918. The cost per plaque should be approximately $2 and will decrease as the order gets larger.

Nominations Needed for Awards and Positions

The Board is looking for nominations for the various awards recognized by FLMS. Is there someone efforts you think deserve special recognition? Check out the FLMS website for information on the awards. The Board also needs nominees for four positions which will become open this May. To nominate someone email Lucee Price at flmshome@yahoo.com.

The Toxic Algae Threat in Florida - A More Tempered View

Dr. Ed Phlips is a professor at UF's Dept. of Fisheries and Aquatic Sciences.

The past year has seen an abundance of media accounts concerning toxic algae in the state of Florida. Many of these accounts have involved inflammatory rhetoric, including the recent special report by the Orlando Sentinel entitled 'Health Menace Lurks in Lakes' (Aug. 26, 2001). I was asked to contribute information to this article as it relates to 23 lakes sampled by the Sentinel staff. My own laboratory examined these samples for algal composition and the results were provided to their reporters along with an extensive discussion about the meaning of the results. Unfortunately, the article generated by the Sentinel does not fully reflect my interpretation of the data. The following report provides a more thorough review of my results and their meaning, particularly as it pertains to our current state of understanding about the threat of algal toxins to Florida residents.

Over the past few decades, research on water quality in the state of Florida has revealed numerous lakes that contain high concentrations of blue-green algae (also known as cyanobacteria). These algae are important components of aquatic food webs throughout the world and in Florida, they are often the most abundant form of algae in lakes. This is not surprising considering the sub-tropical climate in Florida and the high concentrations of nutrients present in many of Florida's waterbodies. As the oldest algal group on earth (dating back 3.2 billion years), they have long played a critical role in photosynthetic production in aquatic ecosystems.

Results

In August of this year the

Table 1. Selected cyanobacterial counts for samples collected by the Orlando Sentinel staff

Lake	Cylindro-spermopsis trichomes/ml	Microcystis aeruginosa (# colonies <100 cells/colony)	Microcystis aeruginosa (# colonies >100 cells/colony)	Anabaena trichomes/ml	Oscillatoria (>25m length) trichomes/ml	Oscillatoria (<25m length) trichomes/ml	Microcystis incerta (# colonies <100 cells/colony)	Microcystis incerta (# colonies >100 cells/colony)	Anabaen-opsis trichomes/ml
Beresford	25083	5821	76	0	72997	20096	32872	3780	454
Griffin	17981	4536	0	0	24484	33778	58942	3704	0
Jesup	7258	8089	0	0	126499	6728	2117	529	76
Harris	7182	3024	0	0	43753	4990	40353	3704	0
Howell	6653	2344	0	302	5216	832	13381	832	0
Harney	3100	3402	0	454	11794	4990	30151	4990	832
Maitland	2873	151	0	76	73451	11247	3931	76	0
Apopka	1964	3476	151	0	2418	756	10577	907	0
Triplet	1058	0	0	227	4234	983	8618	1210	0
Toho	680	3629	0	0	983	0	16772	1814	0
Fairview	453	76	0	60	1991	136	1148	76	0
Underhill	227	605	0	0	37406	11567	5972	0	0
Holden	151	3402	0	0	59849	62569	1663	0	0
Clear Lake	76	983	0	0	47380	15261	2570	227	0
Mineola	49	0	0	0	205	8	57	0	0
Downey	38	0	0	0	114	30	1254	114	0
Butler	6	0	3	0	42	3	273	15	0
East Lake Toho	0	6	0	0	48	21	786	54	3
Eola	0	0	0	0	3141	1208	393	181	0
Dorr	0	0	0	0	2745	78	0	0	0
Crane's Roost	0	0	0	0	15	15	136	76	0
Ashby	0	0	0	0	0	15	23	0	0
Conway	0	0	0	137	99	8	1254	53	0

Sentinel staff collected water from 23 lakes in the Orlando area and delivered the samples to my laboratory for analysis. August is prime time for algal blooms in Florida lakes. We were asked to perform rudimentary counts of the major blue-green algae species in the samples, with emphasis on two taxonomic groups, *Microcystis* and *Cylindrospermopsis*, which contain species shown to be toxic in other regions around the world.

The results obtained by our laboratory were provided to the Sentinel in August (Table 1). It should be noted that these numbers do not match those reported by the Sentinel in their August 26 article because their staff converted our counts to cell numbers.

The results of the analysis are as follows:

- Five of the lakes tested (Beresford, Griffin, Jesup, Harris and Howell) had high concentrations of *Cylindrospermopsis*.
- Another four lakes (Harney, Maitland, Apopka and Triplet) contained moderate levels of *Cylindrospermopsis*.
- Three of the lakes (Jesup, Beresford and Griffin) had high concentrations of *Microcystis aeruginosa*.
- Another seven lakes (Toho, Apopka, Harney, Holden, Harris, Howell and Clear Lake) had moderate concentrations of *Microcystis aeruginosa*.

As might be expected, samples with high concentrations of these key algal groups all came from lakes that are known to be eutrophic (i.e. a term

used to describe lakes that are rich in nutrients, after the Greek term meaning 'well-fed').

To provide additional information for the Sentinel we included two other groups of blue-green algae, *Oscillatoria* and *Microcystis incerta*, that also proved to be major elements of the algal community within the 23 lakes studied. Within the group *Oscillatoria*, only a few species have been confirmed as producers of potent toxins. *Microcystis incerta* has not been associated with toxin production.

What the results mean

The results showed that 11 of the 23 lakes tested had moderate to high concentrations of the two algal groups of greatest concern at the time of sampling. Cell counts for these groups are shown in Table 2 (below). It remains to be seen whether these levels of *Cylindrospermopsis* and *Microcystis aeruginosa* are typical of these lakes. It is also uncertain whether the specific strains of *Cylindrospermopsis* and *Microcystis aeruginosa* observed in these lakes are toxin producers. If they prove to be toxin producers, the question of how much toxin is actually produced by these strains under the environmental conditions found in each lake system will have to be determined. Therefore, at this point these counts can only be labeled as potential toxin producers. It is clear that these systems would be definite candidates for toxin and plankton monitoring research in the future.

It is important to note that even in Australia, where extensive toxic algal research has been done for over a decade, the achievement of certain cell counts does not necessarily allow for a determination of risk. As stated in the current Australian Water Association government web site: "If the water quality exceeds a trigger value (e.g., for cell counts), it is advisable to investigate further to determine the level of risk."

Current Knowledge on the Toxic Algae Threat In Florida

As a matter of perspective, it is important to realize that prior to the 1990s, research on toxin-producing forms of blue-green algae was primarily limited to a relatively small group of scum-loving scientists like me. This changed with the occurrence of several well-publicized incidents involving toxic algae, primarily in Australia. Such incidents demonstrated that the problem of toxic algae warrants serious attention. The past decade has seen a rapid growth in toxic algae research efforts throughout the world. Major efforts to study toxin production by blue-green algae in freshwater ecosystems in Florida began several years ago, even though research on toxic marine algae has been going on for several decades. The first preliminary results of this research are just now being reported. I use the word 'preliminary' for several reasons:

1. The number of lakes and rivers that have been tested for toxins is relatively small and the time period over which the sampling has been carried out is relatively short. This means that we are in the early stages of understanding the scope of this phenomenon in Florida.
2. Although detectable levels of several blue-green algal toxins have been observed in some of these initial samples, there remains controversy over differences in the concentrations of the toxins reported by different independent labs (as described in a recent report by Burns et al. 2001). With time, these methodological issues will undoubtedly be resolved.

3. Most of the information obtained in the Florida research effort has yet to pass the test of peer-review in respected scientific journals. This means that the current interpretations of the preliminary results have yet to be fully examined by the scientific community.

Among the thousands of species of blue-green algae that have been identified, some groups are known to produce toxins under certain conditions. These include several taxonomic groups commonly found in Florida, including *Microcystis aeruginos*, *Anabaena flos-aquae*, *Cylindrospermopsis* and *Aphanizomena flos-aquae*.

Many media accounts of toxic algae have left the impression that these species are recent arrivals to Florida's lakes and rivers. Our research shows that they have been important members of phytoplankton communities within Florida lakes since at least the 1980s when our testing began. It is also likely that they have been part of Florida's aquatic environments for a long time, although the paucity and often primitive quality of data available before the 1970s makes it difficult to establish a definite date. Establishing the presence of these groups in Florida is, however, only the first step in identifying the toxic risk they represent. This is true for several reasons:

Table 2. My estimated cell counts of potentially toxic blue green algae (including *Cylindrospermopsis, Microcystis aeruginosa* and *Anabaena)*.

Lake	My estimates cells/ml
Lake Beresford	386,397
Lake Griffin	275,228
Lake Jesup	267,548
Lake Harris	140,238
Lake Apopka	134,789
Lake Howell	121,489
Lake Harney	117,482
Lake Tohopekaliga	96,844
Lake Holden	86,411
Lake Maitland	30,391
Clear Lake	25,250
Lake Underhill	17,161
Lake Triplet	11,794
Lake Fairview	6,569
Lake Conway	1,368
Lake Butler	654
Lake Minneola	443
Lake Downey	342
East Lake Tohopekaliga	150
Lake Eola	0
Lake Dorr	0

1. It is well known that a group of algae that has been shown to produce toxins in certain ecosystems may not produce toxins in other ecosystems. For example, while *Microcystis aeruginosa* have been shown to produce toxins within certain lakes around the world, algae identified as the same species in other lakes have been shown not to produce toxins. For this reason the scientific community commonly uses the terms 'toxic and non-toxic strains' to define these differences. In addition, even strains of algae species known to produce toxins vary in the amount of toxin they produce, depending on genetic differences and differences in environmental conditions. These nuances are sometimes lost in the translation when communicating with the media or the public. This can be attributed to the fact that the public is more familiar with straight-forward toxic phenomena, such as rattlesnake bites.

2. Identification of algae species is a complex and sometimes controversial process. For example, the taxonomy of the genus *Cylindrospermopsis* has been an issue of discussion between the experts for several decades. The species that has been associated with toxic events in Australia has been identified as *Cylindrospermopsis raciborski*. There is still considerable disagreement about whether the form of *Cylindrospermopsis* found in Florida belongs to the same species. This issue has a direct bearing on the toxic threat that *Cylindrospermopsis* may pose in Florida. If the species or strains of

Cylindrospermopsis found in Florida are not the same as those associated with severe toxin production in other areas of the world , it will take researchers even longer to establish the toxic threat to Floridians. Research is currently underway at several labs around the world to develop genetic markers for toxic strains that will ultimately make this task much easier and more precise.

In summary, the presence of blue-green algae in Florida lakes that are similar to those that have been associated with toxic events in other locations around the world clearly requires serious investigation. The fact that preliminary research has revealed the presence of detectable levels of blue-green algal toxins in certain Florida ecosystems places further weight on the need for this research. However, it will take considerable time and effort to determine the real risk that these potentially toxic species of blue-green pose to the health of ecosystems and people.

What should people do?

1. Don't Panic

The newspaper and television media have focused public attention on the issue of toxic algae. However, the public must realize that many uncertainties remain about the actual threat that algal toxins represent to human health in Florida. Research dealing with these issues is underway and in time there will be a clearer picture of this threat. Meanwhile it is important to keep in mind that people have been using a wide range of lakes and rivers in Florida for recreation for over a hundred years without reports of any overwhelming human health catastrophe involving toxic algae. After the research community has arrived at a definitive picture of the toxic algae threat it should be possible to establish reasonable guidelines to help prevent such catastrophes in the future.

2. Use Common Sense

Until reasonable and justifiable guidelines for exposure to algal populations in Florida's lakes are established the public will need to apply common sense in their recreational activities.

- If you encounter a lake with a nasty surface scum of algae you might choose not to swim in it, as it probably would not be a pleasant experience, anyway.
- Don't drink large quantities of pond scum. Trust me, it tastes and smells awful and may not be good for your health.
- If you become ill while recreating in a lake or river, go home. Seek medical attention if it is serious. If possible, report the incident to your local health authority so that data can be accumulated to serve the public good. Remember, however, that the illness may or may not be linked to toxic algae. Such reactions can be associated with a wide range of issues, including; bacterial contamination, chemical contamination, allergic reactions, pre-existing medical conditions and in some rare cases the over consumption of intoxicating substances.

3. Stay Well-Informed

While "a little knowledge can be a dangerous thing," ignorance is much worse. Although newspapers, radio and television media play an essential and powerful role in informing people about important issues, they should not be the sole source of information that concerned citizens rely on. Take the extra effort to seek out information from local and state agencies (i.e., Water Management District, Florida Fish and Wildlife Conservation Commission, Department of Environmental Protection, etc.), public health organizations and university research and public education programs like the Florida LAKEWATCH program.

Calendar of Events

- **February 7** Central Florida Chapter Public Meeting on Water Quality in Local Lakes. See chapter news for details.
- **February 25 - March 1, 2002** International Erosion Control Association's Annual Conference www.ieca.org Orlando, Florida
- **March 18-20, 2002** NALMS SE Regional Conference Winston-Salem, N.C.
- **June 10-14, 2002** Florida Lake Management Society Annual Conference Naples, FL

Chapter News

A New Chapter in Southwest Florida

The SWFLMS Chapter Organization Committee met on January 15 at Castaways Restaurant in Tampa to discuss the Chapter Bylaws, select a nomination committee and discuss the future of the chapter. Representatives from Pinellas County, Polk County, Highlands County, Hillsborough County, Parsons Inc., USF, AMJ Inc., SWFWMD, Florida LAKEWATCH / Hillsborough LaMP, were present. The new Chapter will be designed to meet the needs of a 16 County area and will conduct public education and information meetings that rotate through the region. The next order of business is to elect officers, approve the Bylaws, and submit the necessary information to the FLMS Board of Directors to gain a charter. The next meeting will be held March 5at McHall's at 11:30 am in Brandon. The place is being determined. We want to thank David Jones of Parsons Inc. for arranging our January Meeting and for volunteering to arrange the March meeting. We also want to thank Joanne Spurlino, a LAKEWATCH / Hillsborough LaMP volunteer for her outstanding work in preparing the bylaws and Kyle Campbell of the USF Center for Community Design and Research for volunteering to establish a chapter Email list server to conduct chapter business. If you want to get involved, contact Jim Griffin at (352) 796-7211 or jim.griffin@swfwmd.state.fl.us.

Central Florida Chapter News

The next public chapter meeting will be held on February 7 at 7 p.m. in the council chambers of the Orange County Administration Building on Rosalind Ave. and Church St. in Downtown Orlando. The topic will be STATUS OF WATER QUALITY IN CENTRAL FLORIDA LAKES with presentations by Kevin McCann, City of Orlando - "Water Quality Trends in Orlando Lakes", Rick Baird, Orange County - "Water Quality Monitoring", Tim Egan, City of Winter Park -"Water Quality Management in the City of Winter Park" and Sergio Duarte, City of Maitland - "City of Maitland Lakes Monitoring Program". This is a great opportunity to share information and keep up with the latest lake management issues throughout the year with your Central Florida colleagues. Come out and support the Central Florida Chapter. We look forward to seeing some old FLMS faces as well as lots of new members. The County Administrative Center is located at 201 S. Rosalind between Jackson and Church Streets. There's a parking garage across from the County Building on Jackson St. Everyone is Welcome!!!!

If you have any questions, call Shannon Carter at 407-858-6100.

Northwest Florida Chapter News

We would like to thank our membership for the incredible support we received during the 12th Annual FLMS Conference we hosted last May here in Tallahassee. We hope to see everyone in Naples! We have kind of taken it easy after the conference, but a number of significant FLMS sponsored chapter

events have recently occurred.
Those of who went on the Lake Jackson Field Trip were treated to the spectacle of 4001-acre lake, which vanished into a cavernous sinkhole. This natural drawdown was utilized to facilitate the sediment removal and dewatering of Lake Jackson. This work has been completed, and tropical storms Allison and Barry rehydrated much of the basin in the past six months. FLMS helped sponsor a dedication of Lake Jackson. This event was called 'Celebration Lake Jackson' and was held on Oct. 11, 2001 at the Marjorie Turnbull Park on Lake Jackson. Commissioner Dan Winchester's staff helped us organize a Rededication of the Lake at 7 PM. This was followed by a Panel Discussion, held in conjunction with the Big Bend Environmental Forum on: phosphate reduction in fertilizers; restocking fish populations; aquatic plant management; and stormwater treatment. The distinguished panel members were Moderator Robert K. Henderson, Big Bend Environmental Forum, Jess Van Dyke, Lakes Biologist, FDEP, Dr. Alan Niedoroda, Friends of Lake Jackson, Rich Cailteux, Florida Fish & Wildlife Conservation Commission, Felton Ard, Leon County Dept. of Public Works, Tyler Macmillan, Northwest Florida Water Management District. Over 300 Friends of Lake Jackson enjoyed this rededication.

At a luncheon on December 12th, the Tallahassee FLMS Conference Board managed to catch up with Dr. Michael Kasha, FLMS 2001 MARJORIE CARR AWARD recipient. This is the Society's highest award, given for a lifetime of work on behalf of Florida's aquatic resources**.** Michael Kasha has been a resident of Tallahassee for the past twenty-five years. Dr. Kasha is a member of the faculty at Florida State University and has been a professor in the Institute of Molecular Biophysics since 1975. He has championed limnological issues throughout his carrier. He has been involved with local area lake issues since moving to Tallahassee. His efforts led to the exclusive lake protection ordinances that have recently been implemented for the Bradford Brooks Chain of Lakes. As a result of these efforts a major highway to the airport in Tallahassee was rerouted away from the lakes. He served for many years on the Leon County Science Advisory Committee providing advise on issues that include our area lakes, wetlands and springs. His many writings include: Drought-Disappearing Lakes and Dying Trees; Sinkholes-The Floridan Aquifer; Lake Bradford Chain of Lakes; Wakulla Springs, 10,000 years Back in Time; Bream- Dad lets go Fishing. While reading a treatise on sonar concerning the vibration of submarines, ribbed structures, he realized that the findings could be applied to musical instruments. He used this to improve the vibrations of the guitar, also a ribbed structure. These 'Kasha Guitars' are so good Pablo Cassals used them. Gibson manufactures them commercially.

If the Northeast Florida Lake Management Society can assist you and your lake, please contact Sean E. McGlynn, Chapter President at (850) 222-4895 or mcglynnlabs@cs.com.

FLMS is a proud member of the Environmental Fund for Florida (EFF) and hopes you will consider making a payroll deduction to support EFF and Florida's environmental groups. Check with your employer and EFF to see how easy it is to support EFF.

ENVIRONMENTAL Fund for Florida
http://www.envirofundforflorida.org/

One Environment. One Simple Way To Care For It.

FLMS is a 501c (3) Tax Exempt Organization – Donations are Tax Deductible

Florida Chapter of the North American
Lake Management Society (NALMS)
Florida Lake Management Society
P. O. Box 950701
Lake Mary, FL
32795-0701

NON-PROFIT ORG.
U.S. POSTAGE
PAID
PERMIT NO. 62
GAINESVILLE, FLORIDA

FLMS Membership Form
Florida Lake Management Society

(A Chapter of the North American Lake Management Society)
P.O. Box 950701, Lake Mary, FL 32795-0701

Name: _____ Affiliation: _____

Address: _____ City: _____

County: _____ State: _____ Zip: _____

Phone: Home: ( ) _____ Email: _____

Work: ( ) _____ Fax: _____

Areas of Shareable Knowledge _____

_____

Annual Dues (Includes Newsletter)

- ☐ Individual $15
- ☐ Non-Profit Organization $35
- ☐ Business/Corporate $65
- ☐ Contributor $100
- ☐ Sponsor $250

Please make checks payable to: The Florida Lake Management Society and return to the above address.