AERF NEWS
Aquatic Ecosystem Restoration Foundation
Restoration
Research
Regulatory
DECEMBER 2013
No. 9
David Petty, Editor

NPDES Update

Carlton Layne

NPDES is still with us and yet another effort is underway in the U.S. Congress to rid us of this meddlesome and needless paperwork exercise. The primary concern at this point is that the longer it takes to reverse the permit requirement, the more difficult it will be for many states to let. As you have learned by now, the permit process has become very expensive in many states, and these states will be reluctant to shut off the positive revenue. Various groups in Washington, D.C., including Responsible Industry for a Sound Environment (RISE) and the Council of Producers & Distributors of Agrotechnology (CPDA) are joining in an effort to persuade legislators to retain the provisions of H.R. 935, the "Reducing Regulatory Burdens Act of 2013," in a final legislative package. This measure was introduced in the 113th Congress by Representative Bob Gibbs (R-OH). A nearly identical measure was introduced this year by Sen. Kay Hagan (D-NC) as S. 802 titled the "Sensible Environmental Protection Act of 2013." These bills would exempt EPA-registered pesticides used in accordance with the FIFRA-approved label from the NPDES permitting requirement. As reported previously, the House version of the Farm bill adopted earlier this year includes the provisions of H.R. 935. However, Senator Hagan's effort to attach S. 802 to the Senate passed version of the Farm Bill was derailed by opposition from environmental interests.

A coalition of advocates are working in an effort to persuade conferees to accede to the House language as they deliberate on a final Farm Bill measure. In so doing, CPDA joined with 161 national, regional, and state organizations impacted by the duplicative regulatory requirements in urging conferees to retain the provisions of H.R. 935 in the final Farm Bill. The letter stated, "…*All* pesticide applications are stringently regulated through FIFRA, including applications to and near water. EPA's FIFRA registration program contains specific protections for water quality, fish and aquatic wildlife. The permits' compliance requirements impose resource and liability burdens on thousands of small businesses, farms, municipalities, counties, and state and federal agencies legally responsible for protecting public health, and expose them to citizen law suits over infractions as minor paperwork violations."

The coalition letter further stated, "…Duplicative regulations strain all levels of government and industry, causing further unfunded mandates on states, local governments, and fragile industries, creating additional red tape, squeezing existing resources, and threatening further legal liabilities. We believe that the permit jeopardizes public health protection, food security and the economy as regulators and businesses expend time and resource to implement and comply with these permits, all for no additional environmental benefits."

AERF will need your support as well as we work on your behalf to inform and assist decision makers. You donation will be deeply appreciated. Please consider the AERF and make a tax-deductible donation.

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Keeping the Lake in Lake Management

John Madsen, Geosystems Research Institute, Mississippi State University

In preparation for the 2012 Annual Meeting of the North American Lake Management Society, Dr. Ken Wagner requested of both the Aquatic Plant Management Society and the Aquatic Ecosystem Restoration Foundation to nominate participants for a workshop on in-lake management techniques, called "Keeping the Lake in Lake Management." After some discussion, Dr. John Rodgers (from Clemson University) and I were willing to participate in the symposium, held November 7-9 2012 in Madison, Wisconsin. The Aquatic Ecosystem Restoration Foundation offered to reimburse my travel for my participation in this symposium and I, in return, acknowledged their support. Needless to say, early November in Wisconsin lived up to my expectation – cold, damp, and windy.

My previous experiences with speaking at NALMS had me expecting a small room with about 30 attendees, including the six to eight presenters for that session. I was pleasantly surprised when the room for our session was large enough to seat over 100, and it was mostly full for each presentation – and some presentations had standing room only. Most of the presentations involved nutrient mitigation techniques in the lake or near-lake area. Dr. Rodgers spoke on the management of algae and harmful algal blooms. My presentation, entitled "Aquatic Plant Ecology Meets the Science of Plant Management," focused on the science behind managing rooted aquatic plants. Both talks, which would have fit in an Aquatic Plant Management Society meeting, were quite well received. In the panel discussion that followed all of the presentations, there were a few questions on managing nuisance plants (algae or otherwise), but most of the discussion surrounded a critique of using alum, with responses defending its use.

After the conference, Dr. Wagner requested that we consider submitting manuscripts to LakeLine on our presentations. Dr. Rodgers passed on that honor, but I decided that this would be a good opportunity to send a message to a NALMS audience on the science behind aquatic plant management. Many of the presentations from this symposium were written for inclusion in the Fall 2013 issue (Volume 33, No. 3) of LakeLine. My article, entitled "Aquatic Plant Ecology Meets the Science of Plant Management," is included.

I want to thank the Aquatic Ecosystem Restoration Foundation for their willingness to reimburse my travel expenses to make this presentation to the NALMS 2013 annual meeting.

BMP 3rd Edition Update

Lyn Gettys, PhD, University of Florida Fort Lauderdale Research and Education Center

We're well on our way to putting final touches on the third edition of BIOLOGY AND CONTROL OF AQUATIC PLANTS: A Best Management Practices Handbook, also known as the BMP. This edition will have all of the content in the second edition and more! We've updated control options throughout to reflect new techniques that have been developed and new products that have been labeled for aquatic use since our last printing. We've added a number of new chapters on topics that include toxic algae and adjuvants and we've included descriptions of additional problematic aquatic plants, such as fanwort (cabomba), waterlettuce and itty-bitty plants like watermeal and duckweed. We hope to have formatting of the new edition completed by the end of 2013 and plan to go to press by mid-February of 2014. Supplies of the 2nd edition are dwindling but we do still have copies available; if you would like more copies of the second edition, please contact AERF Executive Director Carlton Layne at clayne@aquatics.org.

Role of Phosphorus Pollution in Governing Algae Management

West M. Bishop and Ben E. Willis, SePRO Corporation

Phosphorus is increasingly mobilized by numerous natural and anthropogenic sources and is consequently a major focus of new regulations and environmental impact research. The ultimate fate of phosphorus is often accumulation in our precious freshwater resources. The implications of phosphorus in freshwaters can be devastating and directly impact the need for, and intensity of, management.

Phosphorus pollution, and correlated nuisance algae growth, can create the need for managing a system. As algae growth rates are frequently correlated with phosphorus levels in freshwaters, the greater densities are more likely to exceed action threshold levels for maintaining desired uses of the water resource. As reactive algae management requires a specific amount of product per unit biomass of algae to achieve control, increased amounts of algae will command greater amounts of reactive algaecide (and directly and indirectly result in increased risks to non-target organisms). Phosphorus pollution can also select for more aesthetically displeasing and ecological harmful algae (e.g. cyanobacteria dominate at low N:P ratios). The presence of these nuisance cyanobacteria may instigate the need for more reactive management due to their physiological capabilities (growth rate, scum/mat formation), taste/odor production and defense mechanisms (mucilaginous sheath). Additionally, as information increases on the impact of toxins on human health, irrigation, and recreation; there is a paralleled awareness and provocation for management.

Documented research has additionally shown the influx of phosphorus can significantly shift the innate sensitivities of nuisance algae to reactive solutions. Fertilized algae, increased polyphosphate content, and quantity of aqueous bio-available phosphorus can all significantly decrease the effectiveness of historically applied algaecides. Since phosphorus is of critical concern in freshwaters due to the rampant introduction, devastating impacts to water quality, and transformation of algae management; innovative management approaches are needed. Laboratory and field operational research supports limiting phosphorus content or bioavailability as critical avenues for altering the susceptibility of some algae to copper algaecides. This concept has been evaluated at field sites where historic copper algaecide use was providing minimal control. Following incorporation of phosphorus removal, these sites were able to be maintained efficiently with low copper input.

As our water resources evolve with the compiling contributions of phosphorus, there is a concomitant need for advanced approaches to efficiently combat. Integration of phosphorus mitigation can allow enhanced efficacy of reactive solutions (less input) while addressing the key culprit commanding the need for such management (i.e. proactive). With increased regulations on reactive management (NPDES permits and USEPA's RED on copper), strategic approaches are needed to proactively manage or more efficiently reactively control nuisance algae. To ensure appropriate stewardship of your water, specifically designed management approaches should be utilized.

One Fish Cone, Please

An ice cream with a fish flavor, particularly tilapia, anyone?

Yes, there is such an ice cream, says the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD). An attached agency of the Department of Science and Technology (DOST), PCAARRD noted that ice cream has now gone "aquatic with the introduction of the tilapia flavor." The agency in its website observed that ice cream, a very popular one with Filipinos specially during the summer, has so many flavors, including vegetables, such as malunggay and spicy chili.

Plant Camp 2013

Katie Walters, Center for Aquatic and Invasive Plants, University of Florida, IFAS

Trekking through the woods, identifying and removing invasive plants, hopping in an airboat to survey Hydrilla maintenance control, dip-netting macro-invertebrates – it was all in a day's work for teachers who attended PLANT CAMP, an annual five day workshop for school teachers, hosted by the Florida Invasive Plant Education Initiative at the University of Florida.

Dr. David Hall discusses plant morphology

The immediate goal of PLANT CAMP is to introduce teachers to the topics of invasive plant management and give them the curriculum, information from experts, and hands-on experience they need to teach this material with confidence. The long-term goal is for today's youth to draw on this knowledge as they mature into responsible environmental stewards.

University of Florida faculty, state park biologists, administrators from FWC's Invasive Plant Management Section, and plant managers from the private sector contribute as presenters and instructors, providing a rare behind-the-scenes look at natural resource management issues in the state of Florida. AERF's executive director Carlton Layne appears at "Orifice P Nozzlehead" and provides important information about herbicide regulations, as well as answering any questions teachers have.

Being more knowledgeable about the whole process of controlling/managing invasive plants makes teachers much more likely to teach the material, get students engaged, and introduce their students to careers in natural resource management. Here are a few comments from teachers' evaluations of this year's PLANT CAMP:

"Opened up a new world of understanding. I can see taking this experience back to students with many suggestions for career opportunities."

"Everything was excellent, well-planned. Activity was versatile for middle school all the way to AP courses."

Aquatic plant field trip day on Lake Toho

Lakeville: A Natural Resource Management Game

Katie Walters, Center for Aquatic and Invasive Plants, University of Florida, IFAS

Lakeville is a multi-disciplinary teaching unit about ecosystems, natural resource management (i.e., invasive species), and civic responsibility. There are three "sessions" that make up the Lakeville Unit. Each session is designed to encourage critical thinking while enhancing students' environmental knowledge. Sessions 1 and 2 provide students with background information (if needed) and Session 3 brings it all together in a fun game-show style activity that gives students a chance to use their persuasive debate skills and make management decisions about a local freshwater habitat. The goal is to prepare students for their future role as citizens and environmental stewards.

Thanks to generous funding from the Florida Fish and Wildlife Conservation Commission (FWC), the Aquatic Plant Management Society (APMS), the Aquatic Ecosystem Restoration Foundation (AERF), and the Florida Aquatic Plant Management Society (FAPMS), the Lakeville Unit was demonstrated in 10 Florida classrooms this past year, and will be brought to 14 more this coming school year.

Referred to as "Lakeville -- On the Road," this was a pilot project to test the effectiveness of onsite demonstrations as a way of encouraging repeated use in the classroom. Enthusiasm for the project was evident when a small number of teachers were approached last fall (2012) and many of them committed within a matter of days.

Lakeville Citizen Advisory panel asking questions

Overall, every school showed an increase in knowledge on the definitions of native, non-native, and invasive, on why non-native plants can become invasive, and the need for invasive plant and animal management. The test has 9 questions. The majority of students answered 6 of them correctly on the pre-test, and all of them correctly on the post-test.

The most dramatic percent gain in knowledge was on the need to manage invasive plants. Students overall showed a 57% gain. Another large percent gain was on the correct definition of an invasive plant – with a 48% gain. The smallest percent gain, 8%, was on the definition of a native plant but this was because a large majority of students got it correct on both tests. The rest of the questions showed percent gains ranging from approximately 16-22%.

Following are some quotes from thank you cards from student participants:

Thank you for teaching me about plants and animals. I can't wait to learn more.
That game was a fun, fun, fun way to learn about plants and the environment!
My favorite part was when I learned what plants are invasive, native, and non-native.
I can't wait to go home and test my mom on what native and non-native plants are!

Lakeville was also demonstrated at PLANT CAMP 2013, with the teachers playing the role of students. The goal of these demonstrations is to get the teachers comfortable and excited about the unit. PLANT CAMP attendees have been approached this school year about on-site demonstrations in a continuing effort to connect teachers to the resources they need.

The Success of Private – Public Partnership for Aquatic Resource Management

Mark A. Heilman, Ph.D., SePRO Corporation

Partnership between industry, consultants, applicators and other such 'private' parties and public resource agencies—federal, state, and local—has been one of the great strengths of aquatic plant management in a modern history. In 1996, the Aquatic Ecosystem Restoration Foundation (AERF) was formed to 'stem the tide of declining resources for aquatic plant management research'.

As a nonprofit, tax-exempt organization established by a dozen companies, and supported across the entire aquatic industry, AERF has had the powerful role to build bridges to foster greater scientific effort and enhance management and knowledge of invasive and nuisance aquatic weeds. The mission of AERF has broadened beyond aquatic vegetation management to a commitment 'to sustainable water resources through the science of aquatic ecosystem management'. With recent economic instability and a seemingly ever more polarized national political process, the role of AERF to enhance science and related management through private-public collaboration is highly relevant to the future of aquatic resource management. Successful collaboration and outreach in the last decade has led to the USEPA registration of eight new aquatic herbicide actives (including three new herbicide modes of action). Most recently (September 2013), this includes the Section 3 registration of Oasis (a.i. topramezone).

This effort has also resulted in many new herbicide formulations and delivery systems, new use patterns of older technology for improved management of hydrilla, milfoil, and many other submersed, floating, and emergent weeds, and new monitoring and assessment techniques for managers. The positive dynamics leading to such success—including sustained aquatic innovation and investment by industry, effective regulatory interaction, and collaborative research and development—should be carefully analyzed and enhanced. For each new tool or method, along with the success, there are elements to improve upon where better alignment could further improve the long-term outcome—ecologically -and financially. There are also missed opportunities where ineffective interaction has led to fractured and imperfect development, regulatory challenge or delay, and erosion of broader funding for research and operations.

All involved with AERF and the discipline should take an opportunity to critically assess and challenge past systems, bias, stereotypes, and conflicts (referred to collectively in one recent presentation as the 'elephants in the room') and foster improved partnership.

In Memoriam

Norman A. Zion (Aquatic Nuisance Control) of Remus, MI passed away Thursday, October 24, 2013 at the Mid Michigan Medical Center in Clare. Norman was born May 12, 1958, the son of Alex and Helen (McComber) Zion. He was a graduate of Farwell High School. Norman married Julie Hinterman on June 20, 1981.

Norman was a workaholic, loved to be with people never holding back, if you knew him, you knew him. Norman was always funny and loved telling jokes. He was intelligent and a great person to go to for advice. He was a giving man with a heart of gold.

Left to cherish his memory are his wife, Julie; brothers, Carl (Janis) Zion, Robert Zion and Wafiak (Lori) Zion; sisters, Eleanor (Ned) Wixson, Debbie (John) Waddington and Suemya(Ray) Louch; many nieces, nephews, great -nieces and nephews.

Graduate Student Funding

The AERF and the University of Florida Center for Aquatic and Invasive Plants (CAIP) have a cooperative agreement to jointly provide funds and training in graduate education (MS and PhD) in the general area of developing and evaluating selective management of invasive aquatic plants, primarily through proper herbicide selection and application. The intent of this program is to provide trained graduates in the aquatic weed control/ biology and ecology field to foster research and or regulator careers in academia, government, the agrichemical industry or private business. Applicants to the University of Florida should have at a minimum a B average in science courses and a minimum combined score of 305 on the verbal and quantitative sections of the GRE. Interested individuals should review the CAIP website at http://plants.ifas.ufl.edu or contact William Haller (whaller@ufl.edu) for further information.

2014 Short Course

The UF/IFAS Annual Aquatic Weed Control Short Course will be held from May 5 through May 8, 2014 at the Coral Springs Marriott and brings together more than 400 applicators, educators, and industry representatives to learn new techniques and refresh core competencies in aquatic and upland weed control. This course focuses on invasive and exotic species affecting Florida and the southeastern US and provides many networking opportunities so that participants may share field experiences and lessons learned. The Short Course is generally divided into two types of sessions - general sessions which cover CORE standards and concurrent sessions on Aquatics, Right-of-Way and Natural Areas. Participants have the flexibility to attend multiple sessions in order to reach their CEU credit requirements. Up to 20 Florida CEUs may be earned by attending this Short Course in categories that typically include Aquatics, Natural Areas, Rights-of Way, Demo & Research, Forestry, Private and CORE/General Standards, and CEUs for other states may be available as well. For those looking to become licensed applicators, the course offers CORE and category testing at the conclusion of the course, as well as exam prep sessions throughout the Short Course.

You should plan to join us at Short Course if you:

- Need Florida CEUs to keep your pesticide applicator license current.
- Are responsible for aquatic weed control in canals, lakes, golf course ponds, rivers, parks, residential developments and other waterways.
- Operate and calibrate herbicide and pesticide application equipment.
- Are employed by a public agency or private company which is responsible for vegetation management along right-of-ways and in natural areas.
- Are an employee of a manufacturer or distributor that markets aquatic or vegetation management herbicides.
- Use biological control techniques to suppress aquatic weed growth.
- Need to identify or grow aquatic and wetland plants.
- Establish and maintain wetland mitigation areas.

For more information, please visit the Aquatic Weed Control Short Course website at: http://conference.ifas.ufl.edu/aw/ or contact Dr. Lyn Gettys (lgettys@ufl.edu).

AERF and B.A.S.S. Partner in New Contest

The new AERF-APMS/B.A.S.S. Conservation Aquatic Vegetation Management Award will be presented to the club that conducts the most outstanding project that addresses the control of invasive vegetation or promotes the propagation of native vegetation, or both, on a body of water that is accessible to the public.

If your B.A.S.S. Nation club has participated in a project that has either helped control invasive aquatic plants or helped native vegetation thrive, your club has the chance to win $1,500.

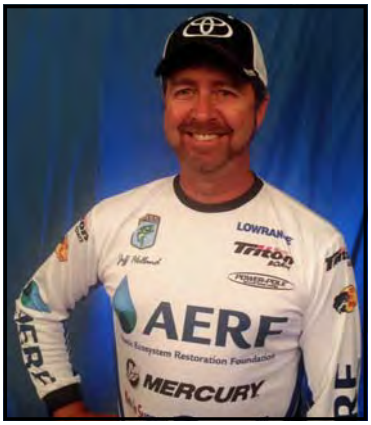
Nominations must be submitted to B.A.S.S. Conservation by Oct. 31 of a given year, beginning in October 2013. The award will be presented during the following year's Bassmaster Classic.

The award will be given annually, but the project must span multiple years and have clearly defined short-term and long-term goals. The project must also include a monitoring plan to determine long-term success.

The B.A.S.S. Nation club must demonstrate that it has worked with the state fisheries and/or wildlife resource agency, the municipality and the project administrator.

Bassmaster Update

Jeff Holland, AERF-sponsored competitor, finished 28th place in the 2013 Bassmaster Southern Open tour, and earned a spot to fish the Bassmaster Elite Wildcard tournament on Lake Okeechobee December 5th, 2013.



RoboFish Project Receives Funding

In our Spring Newsletter, we featured the Robofish robotic water quality data collection platform being developed by Dr. Xiaobo Tan, engineering professor at Michigan State University. Utilizing the exposure received from our article and additional support from the AERF by way of a letter of recommendation, he applied for and was successfully awarded a substantial grant from the National Science Foundation to further develop the device for market readiness. In an email to the editor, Dr. Tan said "*I am very grateful for the great support the AERF has provided in this grant application, and certainly look forward to future interactions with the AERF community*".

Submit Your Articles for the AERF Newsletter

We are always looking for articles, subject matter, photos, or even questions you would like to have answered by Carlton Layne and/or his brother Orifice Nozzlehead. Please send your submission to Dave Petty at dpetty@aquatics.org.

Attention Sponsors:

Your sponsorship renewal letters should be mailed later this month. Please keep an eye out for them. Not a sponsor? Please consider becoming one and supporting AERF's goals and programs! Just complete the sponsorship form below, or access it on our website at http://www.aquatics.org/sponsorshipform.pdf.

Your AERF Sponsorship is key to:

- ►maintaining critical efforts in education and outreach
- ►expanding partnerships with regulatory agencies
- ►building partnerships
- ►supporting high quality research
- ►attracting graduate students
- ►expanding an aleady diverse membership
- ►being a source for resource management agencies

To donate, join or renew your Sponsorship in the AERF **please send the completed application form and payment to Treasurer, AERF, 1860 Bagwell Street, Flint, MI 48503-4406.**

Date: _____ Name: _____ Company: _____

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For more information contact:
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Email clayne@aquatics.org.

☐ Check here if you are an applicator company, so we can include you on our applicator pages.

☐ Check here if you would like to receive a free copy of the BMP with your membership.

Please use the following as a guide in the selection of the desired level of Sponsorship:

Of course, you are welcome to join AERF at any level and additional donations are appreciated.

☐ **Gold** is recommended for manufacturers and registrants	$15,000
☐ **Silver** and above is recommended for formulators	$5,000
☐ **Bronze** and above is recommended for distributors	$2,500
☐ **Affiliate** and above is recommended for consultant and application companies, equipment manufacturers/resellers and biological producers/resellers	$1,000
☐ **Associate** and above is recommended for societies, federal and state agencies, aquatic resource management associations, applicators and consultants	$250
☐ **Individual** and above is recommended for individual members	$50
☐ **Student** and above is recommended for students	$0

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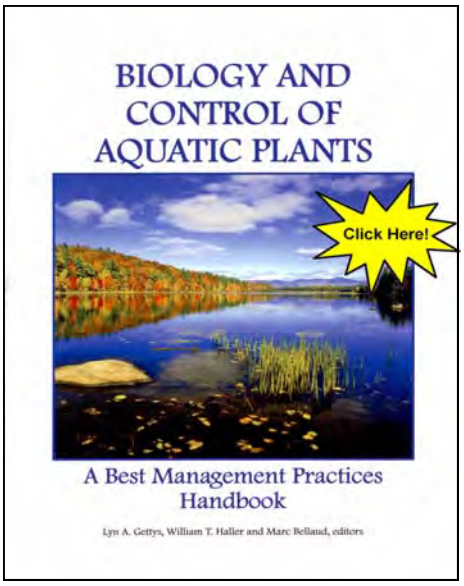

Sponsorship

The AERF respectfully requests that you consider sponsorship. AERF will continue to work on your behalf, and as a member, you will greatly benefit from our work on regulatory and research aspects of aquatic plant management. With changes in the regulatory environment now and in the future, it is essential to be involved and to support all the hard work of your AERF associates.

Please contact Carlton Layne for information on how you can best participate.

The AERF Mission

The Aquatic Ecosystem Restoration Foundation is committed to sustainable water resources through the science of aquatic ecosystem management in collaboration with industry, academia, government and other stakeholders.

Strategic Goals

- Provide the public information concerning the benefits and value of conserving aquatic ecosystems including the aquatic use of herbicides and algaecides in the aquatic environment.
- Provide information and resources to assist regulatory agencies and other entities making decisions that impact aquatic plant management.
- Fund research in applied aquatic plant management at major universities.

Upcoming Meetings

Jan 21-23	**Northeast APMS: Westbrook, CT**
Mar 2-5	**Midwest APMS: Lombard, IL**
May 5-8	**UF Aquatic Weed Short Course: Coral Springs, FL**
May 18-23	**Joint Aquatic Sciences: Portland, OR**
Jul 13-16	**APMS: Savannah, GA**

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