



AERF

15 Years

1996 - 2011

Aquatic Ecosystem Restoration

FOUNDATION





Aquatic Ecosystem Restoration FOUNDATION

President	Company	Served
Richard Hinterman	Cygnat	1996 - 1998
Bill Culpepper	SePRO	1999
Brad Howell	Applied Biochemists	2000
David Ross	Syngenta	2001
Jennifer Vollmer	BASF	2002
Gerald Adrian	Cerexagri	2003
Owen Towne	Griffin	2004
Jim Petta	Syngenta	2004 - 2006
Bill Culpepper	SePRO	2007 - 2008
Gerald Adrian	UPI	2009 - 2010
Mike Riffle	Valent	2011 - 2012

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**Cover Photo: "Camping on Manitowish River, WI"
Courtesy of Malina Piatt**

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TO SUPPORT research and development that provides strategies and techniques for the environmentally sound management, conservation, and restoration of aquatic ecosystems. To accomplish this mission, the Aquatic Ecosystem Restoration Foundation (AERF) supports research on the biology and ecology of nuisance aquatic and wetland plants, particularly exotic species.

In addition the AERF:

PROVIDES Public information concerning the benefits and value of conserving aquatic ecosystems.

PROMOTES Cooperation among federal, state, and local natural resource and regulatory agencies, as well as between the public and private sectors.

FUNDS Graduate stipends in applied aquatic plant management research at major universities.

The Aquatic Ecosystem Restoration Foundation was established in October 1996. Formed to address specific challenges of aquatic plant management at that time, this diverse group of manufacturers, distributors, applicators, researchers, scientific societies and shoreline owners with a stake in the environmentally sound management of our water resources has grown into an organization that has become a recognized and welcome name in research, education and outreach.

In this publication we present perspectives of the AERF from a variety of our diverse sponsors, members and cooperators. These groups range from anglers, management agencies, regulators, researchers, scientific societies and students to applicators, manufacturers, registrants, officers and board members. Many of these folks have been impacted on a personal as well as professional level over the years. We thank the authors for their contributions and insights into the first 15 years of the AERF.

We also want to thank our sponsors by providing this retrospective publication to them and other friends. The success of the AERF is due entirely to the generosity and support you've given through your sponsorship. Not a sponsor? Visit our website and learn how to become one, and help us continue our mission far into the future.

LOOKING BACK: THE FIRST 15 YEARS

CARLTON LAYNE

EXECUTIVE DIRECTOR, THE AQUATIC ECOSYSTEM RESTORATION FOUNDATION

The defunding of the US Army Corps of Engineers (Corps) Aquatic Plant Control Research Program (APCRP) in 1995 inspired a group of visionaries led by Richard Hinterman to create the Aquatic Ecosystem Restoration Foundation (AERF). At that time (and still today), the APCRP provided the nation with the only federal presence focused on applied research and developing solutions to aquatic plant management problems. The AERF could not replace the annual congressional appropriation to the APCRP by any measure, but supporting the laboratory and field research needs of the major entities involved in the aquatics market would allow the Corps program to remain viable. The AERF subsequently entered into a Cooperative Research and Development Agreement (CRDA) with the Corps and initial projects began. When Congress decided to reinstate funding for the APCRP (albeit at a reduced level), the AERF continued to play a supporting role to the APCRP and previously donated funds were made available to support other projects.

Under the guidance of the Board of Directors, which consisted of Gold Sponsors and the first Executive Director, Lewis Decell, the purpose of the AERF was:

“...to promote and support those educational, scientific and research organizations that are selected by the Board of Directors.”

This succinct statement captures the initial primary intent of the AERF and contains the seed that grew to become the ultimate goals of the AERF in later years.

The future of the Corp’s APCRP seemed fiscally secure, so the AERF began a five-year expansion of its activities and involvement in aquatic plant management activities across the nation under the stabilizing and steady stewardship of the second Executive Director, Michael Moore. This transformation bore fruit and the AERF has continued to excel under the leadership of current Executive Director, Carlton Layne, who took over the reins of the AERF in 2004. The AERF has moved from a funding mechanism for research, scholarships, symposia and projects to what many see as the primary action arm of the aquatic plant management arena in the United States.



Thomas Lake, FL

Photo by Mike Riffle

The current purpose and mission statement of the AERF is:

“To support research and development that provides strategies and techniques for the environmentally sound management, conservation and restoration of aquatic ecosystems. Research provides the basis for the effective control of nuisance and invasive plants and algae.”

Fifteen years has seen a gradual expansion of the AERF’s activities while staying within the general intent of the original purpose. When the AERF was created in 1996, no one could have foreseen the introduction of so many new invasive and exotic species (both plant and animal); the development of herbicide resistance by some aquatic weeds; the requirement for Clean Water Acts National Pollutant Discharge Elimination System (NPDES) permits for herbicide applications in, near and over waters of the United States; the recently renewed effort to defund the APCRP;

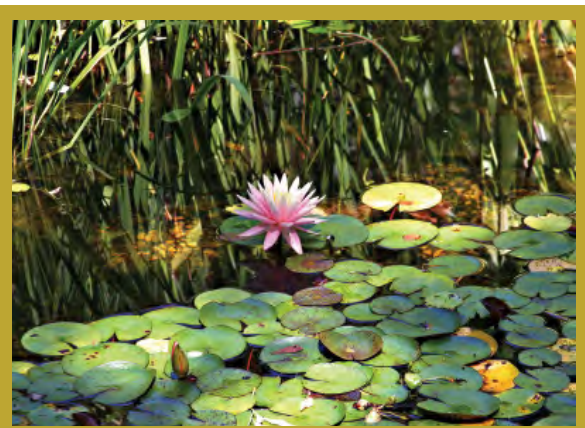
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(Looking Back - Continued from page 2)

along with the cyclical return of anti-pesticide factions around the country.

The AERF, in accordance with its goals, has met these challenges and more by responding aggressively when issues arise and preparing pre-emptive actions when maturing issues can be predicted.

Aquatic-related research continues apace. All the APCRP teams – Biological Control, Ecosystem Restoration and Chemical Control – and researchers at more than eighteen universities across the nation have been the beneficiaries of the AERF Special Project process and funding support. The AERF provides a graduate stipend to the University of Florida to support the work of graduate students and plans to expand programs of this type to other universities. In addition, the AERF supports the Aquatic Plant Management Society and its regional chapters' scholarship efforts, and also provides travel stipends to students for participation in society meetings.



Water Lily

Photo by David Petty

The AERF works with Crop Life America and Responsible Industry for a Sound Environment to respond to current and emerging regulatory issues through timely “Action Alerts”, participates in and conducts national and state workshops, and serves as the educational and outreach arm of cooperative efforts to keep aquatic plant managers informed about evolving issues. The AERF provides subject matter experts to state and federal agencies, equipping them with the most up-to-date scientific information to formulate technically sound decisions. The AERF also provides travel stipends to federal and state employees and other experts to attend society meetings, training, and public meetings related to aquatic plant management. Importantly, the AERF continues its effort to affect the implementation of the Endangered Species Act and the NPDES Pesticide General Permit through education and outreach activities.

The AERF has become the “go-to” entity for information and outreach to the public on the benefits of aquatic plant management. The highly acclaimed second edition of the Best Management Practices (BMP) Manual is so popular that a third edition is forthcoming. The AERF newsletter is published three times per year and the Foundation also maintains a Facebook page and a blog. The AERF conducts symposia and workshops that provide speakers and experts on request (at no charge) to the public and decision makers seeking information about aquatic plant management issues. In fifteen years, the AERF has evolved from a primarily passive organization that sponsored and co-sponsored a wide variety of projects to an aggressive entity that is out in front of aquatics issues, consistently providing the information needed to support balanced decisions and results. The AERF actively promotes science-based solutions using integrated pest management techniques that are currently available – all the tools in the box.

For the past fifteen years, the AERF's Sponsor support has grown as the Foundation has matured. Sponsors provide the means for the AERF to do what it does. As support for the Foundation grows, so will the ability of the AERF to respond rapidly to issues the aquatic plant management world will likely encounter in the next fifteen years. Please visit the AERF website (www.aquatics.org) for news and information on current events, as well as information on how individuals and companies can be part of this action-oriented, not-for-profit 501(3)(c) Foundation.

Since 1996, the AERF has administered over \$8 million dollars in research funds. Of that, \$2 million has been allocated to the support of graduate students, through scholarships and research funding.

PROFILE: RICHARD HINTERMAN

“That’s the Wrong Answer!”

It’s 1995. The US Army Corps of Engineers (Corps) Aquatic Plant Control Research Program (APCRP) had just been zeroed out of the 1996 federal budget and people in the aquatic plant management industry who understood the importance of the work performed by the research teams were trying to develop a way to keep the APCRP funded and functioning. Never one to pass up a good challenge, enter Richard “Dick” Hinterman. He called Dr. Kurt Getsinger, Chemical Control Team Leader for the Corps’ APCRP program, at home one evening to ask if the Corps could accept money from private industry. The response was a definitive “No.” Richard’s response was “That’s the wrong answer!” Ultimately, it was determined that the Corps could indeed accept money from a source outside the government if a Cooperative Research and Development Agreement could be executed. That exchange was the beginning of the Aquatic Ecosystem Restoration Foundation (AERF) as envisioned by Richard. He was the primary driving force behind the creation of the AERF and its first president, and he remains its only treasurer. Richard’s company, Cygnet Enterprises, was a charter Gold Member of the Foundation. Richard Hinterman is a familiar face in aquatic plant management circles and is well-known for his fiscal acumen and exceptional management and business-building skills. At the same time, he and his lovely wife Judy form a matching pair that defines generosity and gracious hospitality.

Richard was born in Merrill, Michigan in 1936 and grew up on beautiful Higgins Lake. Early on he began to show an inclination for management and business. He was responsible for providing fish for his family of twelve on the no-meat Catholic Fridays in those pre-Vatican II days; he caught more fish than he needed and figured out a way to keep the extra fish frozen for those days when he wanted to do something more in line with a boy’s pleasure. Later, while still a youngster, he cut lake ice in the winter and sold it to summer tourists who visited the lake on vacations.

Richard graduated from high school in 1954 and went to work at Compton Ford in Flushing, Michigan. A scant four years later, he owned the dealership and became the Ford Motor Company’s youngest dealer in the corporation’s history. As he attended the Ford Marketing Institute in Dearborn, Michigan, the business grew from the sale of seventy-eight cars and trucks to thirty-three hundred vehicles in 1973. The Ford Motor Company presented him with the Distinguished Dealer Award for thirteen consecutive years. His empire

grew to encompass all the major automobile manufacturers and included dealerships in Michigan, Arizona and Florida, as well as motor homes and mobile homes sales.

By 1975, the Hintermans sold the car businesses and Richard settled into the life of a gentleman farmer in Imlay City, Michigan. For those who know Richard even casually, it may be hard to imagine him relaxing in a bucolic setting and literally going to pasture at the ripe old age of forty. While there most certainly is a side of Richard that seeks the pleasure and healing calm of a rural life, eventually that restlessness



Judy & Richard Hinterman

Photo by Joe Bondra

began to stir and the entrepreneurial spirit returned. Richard purchased an aquatic application business “to keep his farm hands busy” and he and Judy discovered that they liked the aquatic work.

They began to acquire additional application companies and along the way encountered issues with obtaining and supplying their companies with aquatic chemicals, so he characteristically solved that problem by forming Cygnet Enterprises, an exclusively aquatic product dealership. Ultimately, they sold the application businesses and

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(Profile - Continued from page 4)

Richard and Judy concentrated on growing the dealership. Today, along with its flagship office in Flint, Michigan, Cygnet Enterprises operates in North Carolina, Indiana, Pennsylvania, Idaho, Montana and California. Richard truly represents the quintessential American success story.

Richard has most assuredly made his mark in the world of aquatic plant management. He has been a member of the Aquatic Plant Management Society for thirty-six years, served as President and Director, and continues to serve as Chairman of the Finance Committee as he has for many years. He was instrumental in the founding of the Midwest Aquatic Plant Management Society (MAPMS), the Northeast Aquatic Plant Management Society (NEAPMS) and the Michigan Aquatic Managers Association (MAMA). He has been MAPMS President twice and was the inaugural President of MAMA. Just as Richard was mentored and guided by the former owner of Compton Ford, he has likewise become the mentor, sponsor, advisor, role model and friend of successful businessmen – mostly in the aquatic plant management industry – literally around the country. When misfortune or tragedy befalls someone in the aquatic plant management community, Richard Hinterman is usually the first to hear about it and is likewise the first to call with an offer to help.

Richard remains the heart and soul of the AERF and with his business acumen, farsightedness and sage advice, he has guided three Executive Directors and the Foundation through fifteen years of expansion. His unwillingness to accept “No” for an answer has spurred creativity and innovative thinking which characterizes the evolution of the AERF. Dr. Getsinger wasn’t the first to hear “That’s the wrong answer!” and he certainly hasn’t been the last. Richard Hinterman may not know the answers to the questions he asks, but he instinctively recognizes the right answer when he hears it.



Tricolor Heron

Photo by Don Doggett

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PERSPECTIVES ON THE AERF

THE UNIVERSITY RESEARCHER PERSPECTIVE

JOHN D. MADSEN, PH.D.

ASSOCIATE PROFESSOR, GEOSYSTEMS RESEARCH INSTITUTE, MISSISSIPPI STATE UNIVERSITY

The Aquatic Ecosystem Restoration Foundation has been a powerful force in my professional career and research activity. A typical university professor is evaluated on three factors: teaching, research and service. The AERF has played a role in all three areas and has provided me with opportunities to both enhance my career and to enhance the visibility and message of aquatic plant management and the restoration of aquatic ecosystems through the selective management of invasive plant species.

My teaching opportunities have been enhanced in two significant ways. The AERF has provided me with numerous opportunities to participate in continuing education programs, which some universities describe as extension or outreach. Most of these events have involved presentations in symposia, where colleagues from other universities and institutions also deliver technical presentations. This allows me the opportunity to meet other researchers, discuss possible collaborative research opportunities, or just to build networks and relationships. In addition to sponsored and organized symposia, the AERF has directed requests to me as part of a speakers' bureau and has assisted organizers of other workshops and events with travel support on a case-by-case basis.

The second way in which the AERF has enhanced my teaching activities is by providing a wide array of opportunities for my graduate students, which includes covering

travel costs for students to attend national and regional scientific meetings, funding graduate student stipends, and other types of support. Our industry has the best support of graduate students of any in weed science and this is due in large part to the contributions of the AERF.

My research activities have also benefited from AERF general and special project funds that support specific research projects which in turn support graduate student stipends and activities. The AERF has acted as the organizing hub for regional multi-institutional research, so no single university or lab is given leadership priority over another. The AERF has acted to guide funds to appropriate researchers and has served as an intermediary with federal, state and local governments in developing research plans. All of these research projects share a common goal: to improve the environmentally-compatible selective management of invasive aquatic plants. In addition, AERF has acted as a go-between for industry research projects, allowing companies to support university research.

Last but not least, the AERF has provided me with valuable opportunities for service. I am fortunate to have been included in the Technical Advisory Committee since the inception of the AERF, which has brought opportunities to review research proposals, management plans and statewide plant management programs. The AERF has directed numerous questions to

me in my area of expertise, which also expands my service portfolio. Although some of these are regional, many are national or international queries. As other university professors know, having a national or international reputation is important come time for evaluation – and the AERF has assisted me in developing that sort of reputation. The AERF has been a significant force for positive change in aquatic plant management and the Foundation has included me in that activity. The AERF can assist all professionals, no matter their segment of the industry, in professional development and public service as well.

Dr. John D. Madsen is an Associate Professor of Research and Extension in the Geosystems Research Institute and the Department of Plant and Soil Sciences, Mississippi State University. Dr. Madsen is responsible for coordinating research projects on invasive species in Mississippi, the southeastern US and around the country; and specifically for research, education and outreach on invasive aquatic plants. Dr. Madsen has a Bachelor of Science (1980) degree from Wheaton College, Wheaton, IL, and Master of Science (1982) and Doctor of Philosophy (1986) degrees in Botany from the University of Wisconsin-Madison.

PERSPECTIVES ON THE AERF

THE STUDENT PERSPECTIVE

RYAN WERSAL, PH.D.

POSTDOCTORAL ASSOCIATE, GEOSYSTEMS RESEARCH INSTITUTE, MISSISSIPPI STATE UNIVERSITY

A graduate student's life is one of tedious tasks, long days in the field, late nights, and at many times can be overwhelming. What's more, major professors constantly urge their students to attend regional and national conferences and to give presentations. I know this experience is a valuable part of professional development and it does pay off in the long term. However, in these times of budget-strapped programs, finding the funding to support a graduate student, let alone the funding to send the student to conferences, is becoming increasingly challenging. The Aquatic Ecosystem Restoration Foundation fully recognizes the importance of attracting and sustaining graduate programs and students in the field of aquatic plant management.

There are many students who have benefited from the AERF's support throughout the years and I am fortunate to have been one of them. I began my PhD program in 2005 with little funding to support my research plan. However, I submitted my dissertation proposal to the competitive grants program sponsored by the AERF and the Aquatic Plant Management Society and was awarded a generous stipend of \$60,000 to support my research. This funding proved to be invaluable and allowed me to complete my PhD program in a timely manner.

Although research grants represent a significant investment in students, they are only one of the ways that

students benefit from the AERF. Over the past few years, I have seen a steady increase in the number of graduate students that attend regional and national meetings to learn and share information about aquatic weeds and their control. This increase is due in

been positive and I am only one of many students who have benefited directly from the AERF through research grants and professional development opportunities. The AERF recognizes the importance of students as the future of aquatic plant



Green Frog

Photo by David Petty

large part to the AERF generously covering the cost of student lodging at these meetings so students can attend, give presentations and make valuable contacts. In doing so, the AERF has promoted the professional development and networking opportunities of many students at a variety of institutions over the years. By taking full advantage of the generosity of the AERF, I have been able to give presentations at regional and national meetings, build my national reputation and develop new working relationships with local, state and federal agencies, as well as commercial and non-profit organizations.

My experiences with the AERF have

management and provides valuable support to developing graduate students in both university programs and professional societies.

Ryan Wersal is currently a Postdoctoral Associate in the Geosystems Research Institute at Mississippi State University. Ryan has a 100% research appointment which primarily includes experimental and field research study design and implementation. Ryan's research interests include aquatic plant management techniques, effects of management on non-target species, integrated pest management, and invasion ecology.

PERSPECTIVES ON THE AERF

THE APPLICATOR PERSPECTIVE

TERRY L. GOLDSBY

PRESIDENT/SENIOR BIOLOGIST, AQUA SERVICES, INC.

As an aquatic scientist for nearly 40 years, and a business owner for nearly 30, I have always found that one of my greatest challenges is to ethically balance profitability with scientific truth. My staff and I consider ourselves to be scientists first, but we still struggle at times to

Director Carlton Layne and his Technical Advisory Committee (TAC) stand ready to assist with public projects and meetings that are important to Alabama, Tennessee and the entire Tennessee Valley Region in which we operate, as well as the rest of the country. For example, Aqua

socio-economic impacts of invasive aquatic weeds and the science of the two strains of hydrilla found in the Tennessee River. After their presentations, they participated in a round table discussion organized to facilitate the formation of the new stakeholder's group. Local newspapers and other media hailed the meeting as a great success that served its intended purpose.

All in all, it's easy for us to sum up the value to our company of our sponsorship of the AERF. It's about truth and credibility. When we need to refer our clients and customers to a source that provides credible, useful and unbiased information about aquatic management, we've been able to say go to www.aquatics.org. When we've needed on-the-ground expertise to provide solid science to our business community, it was available without question. It is clear that our membership in the AERF is one of our company's most valued investments.



American Coot

Photo by David Petty

convince clients and customers that our recommendations are supported by scientific evidence and not simply a means to improve our bottom line. For example, folks invariably ask the question, "Why is this expensive aquatic herbicide a better solution to my problem than the less expensive grass carp?" The Aquatic Ecosystem Restoration Foundation is a reliable, credible and unbiased resource that provides our customers with the information they need to be sure that we are indeed offering them the best management options available for their problem. We simply refer them to the AERF website and suggest they have a look at the "Best Management Practices Handbook".

In addition, the AERF Executive

Services was recently called upon to organize a regional meeting for homeowners, fishermen, state officials and city/county administrators in Guntersville, Alabama. The purpose of this meeting was to present factual information to attendees about problems in the area with the hope that this "basic education" would provide a common ground and starting point for the organization of a new stakeholder's group. Of course, the first person that we called was Carlton Layne of the AERF.

Carlton and Dr. John Madsen, a member of the TAC, were able to provide concise and clear information on a number of topics that included the new NPDES permit process, the safety of aquatic pesticides, the

Terry Goldsby is President and Senior Biologist at Aqua Services, Inc. a company that he formed in 1983. Prior to founding Aqua Services, he was an Environmental Specialist with Florida DNR's Bureau of Aquatic Plant Research and Control from 1974 to 1977, and a Research Botanist with the Tennessee Valley Authority from 1977 to 1983. He has a Bachelor of Science (Zoology) and a Master of Science (Botany) from Northwestern State University of Louisiana, Natchitoches, Louisiana.

PERSPECTIVES ON THE AERF

THE DISTRIBUTOR PERSPECTIVE

JOE BONDRA

PRESIDENT, CYGNET ENTERPRISES, INC.

Aquatic invasive and nuisance vegetation and algae can significantly degrade water quality and cause human health risks, loss of aquatic habitat for fish and other wildlife, and other serious consequences. Aquatic weeds can also have significant negative impacts on property values and recreational activities. These aquatic invasive and nuisance species do not respect geographic or political boundaries and are truly national problems that require national attention.

Although there are many traditional management techniques and products that may provide some control of these invasive weeds, there is a great need to create new strategies and develop additional products in the battle against invasive and nuisance aquatic plants and algae. These new strategies, products and improvements can only be developed through competent, credible and sustainable research. The Aquatic Ecosystem Restoration Foundation gives members a platform for this research. Cygnet Enterprises Inc. has been 100% dedicated to aquatics for nearly 40 years and is a Charter Sponsor of the AERF. Cygnet has also been a Gold Sponsor since the Foundation's inception 15 years ago. We feel it is our responsibility to be completely and passionately engaged in all aspects of the aquatic plant management industry so that we can keep our loyal customers informed of trends, improvements, new products, pending legislation, relevant publications and research, Foundation partnerships, educational opportunities and other

informational exchanges. Because Cygnet Enterprises remains actively involved with the AERF, we are able to do this and much more. Our customers deserve no less.

National attention and cooperation is critical to the sustainability of aquatic plant management. Again, sponsorship of the AERF brings all these issues to the forefront; you can be part of it and actually have the opportunity to make a difference in aquatic plant management activities today and in the future. Sponsorship of the AERF allows companies to build relationships and network with product manufacturers, distributors, aquatic applicators, educators and regulators, all with the common goal of improving aquatic plant management.

Joe Bondra has been with Cygnet Enterprises, Inc. for over 20 years and currently serves as President. Mr. Bondra has served on the Board of Directors for the Midwest Aquatic Plant Management Society (MAPMS) since 1994 and has served as its President in 1997 and 2008, as Director in the Aquatic Plant Management Society from 2000 to 2003, is Legislative Committee Chair for the Michigan Aquatic Managers Association and serves on the Pesticide Advisory Committee, Michigan Department of Agriculture and Urban Development as a Governor appointee.



Hickey Creek, FL

Photo by Don Doggett

PERSPECTIVES ON THE AERF

THE MANUFACTURER PERSPECTIVE

GERALD ADRIAN

BUSINESS MANAGER AQUATICS, UNITED PHOSPHORUS INC.

The formation of the Aquatic Ecosystem Restoration Foundation coincided with UPI's decision to enter into the aquatics market. We were prepared to commit resources to personnel, research, marketing and sales efforts, but our first priority was to gain an understanding of the state of the aquatics market and where it was going. New products were being introduced to the market and some products were withdrawn, but other changes in the market were more subtle and would take time and effort to understand.

Endothall has been used as a broad spectrum, non-selective herbicide for over 30 years. Trials conducted through collaborations with UPI, the AERF, the US Army Corps of Engineers (USACE) and state and local agencies demonstrated it could selectively control a variety of aquatic weeds without damaging desirable native aquatic plants. Our collaborative research with the AERF and others also led to the development of new methods of application. For example, research conducted with the USACE via the AERF revealed that early-season applications controlled weeds such as curlyleaf pondweed, allowed native aquatic plants to rebound and resulted in the long-term restoration of the aquatic environment.

The AERF has provided speakers for numerous symposia to provide information about aquatic plant management to a wide array of audiences ranging from government regulators to bass anglers. Few people understand the properties and impacts of aquatic plants, much

less the aquatic herbicides used for control of invasive aquatic weeds. Because most efforts to control invasive and exotic aquatic plants take place in public water, education is a key element of aquatic plant management. To address this issue, the AERF provides highly qualified speakers to discuss pesticide-related topics to help regulators, lakefront property owners, anglers and others understand the impacts of invasive aquatic plants, as well as management options. UPI has benefited from this effort, as have many other AERF Sponsors and the aquatic plant industry.

The AERF has also provided UPI with valuable information and support for the aquatics business, including studies on the value of invasive weed control to the community and the impact invasive aquatic plants have on the economic value of a lake. Dr. Kurt Getsinger, a researcher with the USACE, member of the AERF Technical Advisory Committee and aquatics subject matter expert to the EPA, has provided invaluable support to all registrants of aquatic herbicides and algaecides. Also, the AERF's Best Management Practices Handbook is a valuable tool for anyone with



Dollar Sunfish

Photo by David Petty

an interest in determining how various methods of aquatic weed control can be used in an aquatic plant management program. Since the inception of the AERF 15 years ago, its mission has evolved and developed; as a result, the Foundation is now an integral part of the aquatic plant management community.

Gerald Adrian is the Business Manager for Aquatics for United Phosphorus Inc, in King of Prussia PA. He has been involved in the Aquatics business for the past 15 years. Prior to taking his current position, Gerald held positions as Marketing Manager, Product Manager and Sales Representative with Elf Atochem (now UPI). After graduating from Texas Tech he held positions with Ciba Giegy prior to joining Penwalt in 1984.

PERSPECTIVES ON THE AERF

THE AQUATIC PLANT MANAGEMENT SOCIETY PERSPECTIVE

GREGORY E. MACDONALD, PH.D.
APMS PRESIDENT 2010

The Aquatic Ecosystem Restoration Foundation and the Aquatic Plant Management Society (APMS) have collaborated closely in recent years to provide a wide range of educational and research opportunities to graduate students and interested members of the public. The AERF also provides tremendous support for aquatic plant research by working closely with the US Army Corps of Engineers and other entities.

The AERF has been one of the strongest and most consistent supporters of graduate student education in aquatic plant management, providing over a quarter of a million dollars in leveraged support for APMS student members. The AERF was instrumental in developing and implementing the APMS Graduate Student Research Grant, which has supported graduate student research projects in Michigan, Maryland, South Carolina, Mississippi and

currently North Carolina. Moreover, these projects have encompassed topics such as herbicide physiology, ecosystem restoration, submersed plant management and algal toxicology.

The APMS has a long history of supporting students. Students who attend and present at the annual meeting have enjoyed lodging, registration and a post-conference student tour, with funding for these activities provided by the AERF. The only way our society can provide this level of support is through a strong and committed partnership with the AERF. In addition, the AERF provides student support through regional chapter societies, which are directly affiliated with APMS.

While the AERF is a strong financial supporter of APMS, the real support comes from its sponsors and officers. Carlton Layne, Executive Director of the AERF, is a constant source of

information, encouragement and support. He is a former President of the APMS, and always participates by giving presentations at the annual meetings. He is also a frequent speaker at regional chapter meetings. Other sponsors of the AERF serve as directors, committee chairs and special liaisons to APMS, which allows the society to continue to be the premier source for aquatic plant management research and outreach.

In short, the APMS would not be the organization it is today without the support of the AERF. We look forward to continuing our long and fruitful relationship.

Greg MacDonald is a Professor of Weed Science and Agronomy at the University of Florida. His research focuses on invasive plant management and biology, with an emphasis on perennial grasses and aquatic plants. Dr. MacDonald has a strong international component with a USAID-funded project in Guyana, South America. He has trained several MS and PhD students and is active in a number of weed science related societies. He has served as president of the Florida Weed Science Society (2002) and the Aquatic Plant Management Society (2010). He has served on the Weed Science Society Board of Directors for two terms as the APMS representative and is currently chair of the education committee. He was recently elected as Secretary-Treasurer for the Southern Weed Science Society.



Mystic Lake, FL

Photo by Mike Riffle

PERSPECTIVES ON THE AERF

THE STATE PERSPECTIVE

AMY FERRITER

IDAHO STATE DEPARTMENT OF AGRICULTURE

In 2006, the forward-thinking Idaho Legislature tasked the Idaho State Department of Agriculture (ISDA) with developing a statewide, multimillion dollar Eurasian Watermilfoil (EWM) control program. Although Idaho has long been a leader in the field of terrestrial noxious weed management, pioneering the Cooperative Weed Management Area (CWMA) strategy, the state had never before administered a major aquatic plant control program.

The State of Idaho turned to the AERF and the University of Florida (UF) to provide an independent assessment of the Idaho EWM program and provide programmatic recommendations to the state. The "Idaho Eurasian Watermilfoil Peer Panel" (2006) was chaired by Dr. Joe Joyce (UF) and included Dr. Bill Haller (UF), Dr. Ken Langeland (UF), Jeff Schardt (Florida Fish and Wildlife Conservation Commission), Chip Welling (Minnesota Department of Natural Resources) and Robert Leavitt (California Department of Food and Agriculture). The six panelists had more than 160 years of collective experience in aquatic plant management and had published more than 400 papers on the subject.

The 2006 Peer Panel was a tremendous resource to the state and thoroughly reviewed the fledgling program to assess strategic, programmatic and organizational options to minimize costs and increase program effectiveness. ISDA has followed most of these recommendations over the last 5 years, and still references the

2006 report as the program matures. These professional relationships have continued, and the AERF now facilitates technical cost share reviews and conducts aquatic plant field surveys for ISDA. Sponsors of the AERF also pursue and conduct applied research that directly benefits the state's aquatic plant management

In 2007, quagga mussels were discovered for the first time in the Western United States (at the Lake Mead National Recreation Area). In response to this find, the Idaho Legislature enacted a comprehensive Invasive Species Law in 2008 and charged ISDA with developing a program to prevent invasive mussels



Beaver Pond, Yosemite CA

Photo by David Petty

program.

The great news to report from Idaho is that treated waterbodies show significant decreases in EWM distribution and a number of previously infested waterbodies have been found to be free of EWM more than a year after treatment. Also, EWM has not expanded its range in the state and has been successfully excluded from Eastern Idaho. Although the EWM control program in Idaho is a long-term undertaking, positive results are already being realized, in part thanks to the guidance and ongoing professional involvement of the AERF.

from establishing in the state. The prevention program includes watercraft inspection stations at the state line, an outreach campaign and an Early Detection and Rapid Response (EDRR) monitoring network.

Unfortunately, there are no proven control technologies available to manage these mussels in lakes, rivers and naturally flowing systems. Although the chances of eradicating an incipient population of these mussels in Idaho are small, those chances depend directly on the ability of the state to respond quickly and effectively once a population is

(Continued page 14)

PERSPECTIVES ON THE AERF

THE ENVIRONMENTAL PROTECTION AGENCY PERSPECTIVE

DONALD R. STUBBS

RETIRED ASSOCIATE DIRECTOR, REGISTRATION DIVISION, OFFICE OF PESTICIDE PROGRAMS, EPA

The Aquatic Ecosystem Restoration Foundation was important to me as a US Environmental Protection Agency (EPA) employee for several reasons. The Foundation provided experts in aquatic weed management to educate EPA personnel and allowed me to educate others on how the EPA registers pesticides. The AERF also helped bring together the EPA, academia, state and federal agencies,

aquatic weeds, and I had to ensure that the benefits posed by the use of a pesticide in water outweighed the risks. The EPA examines the risk posed by a pesticide to the user, bystanders and from consumption of food containing pesticide residues. Food includes water, which has the highest consumption rate of all foods; therefore, the EPA is very concerned about residues of pesticides in water.

requirements, pesticide companies had little incentive to register a pesticide for aquatic use because the economic return was small compared to data costs and potential liability. As a result of economics, liability and ever-expanding data requirements, no new aquatic pesticide uses were registered between 1986 and 2002.

The AERF helped bring federal and state agencies, academia and private industry together to share their expertise on invasive aquatic plants and aquatic pesticide use.

Aquatic uses are a small part of the workload for OPP, whose expertise is limited regarding how and why aquatic pesticides are used. OPP valued the expertise provided by the AERF in dealing with difficult public health issues and the environmental challenges associated with pesticide use in potable drinking water and in environmentally sensitive areas. These experts provided information about how aquatic pesticides are used via presentations and by maintaining a continual dialogue, as well as through site visits. This information was very beneficial to EPA scientists in connection with registration and re-registration of aquatic pesticides.

I have participated in several AERF symposia and have spoken about invasive aquatic plants, the potential problems they can cause and their control. These symposia allowed me to educate others, who authorize data requirements for registration of pesticides, how those data are reviewed and how the data are used to develop pesticide labeling. I have



Wood Duck

Photo by David Petty

pesticide users and the pesticide industry to register new aquatic uses and to retain old aquatic uses while ensuring their safe use.

I became associated with the AERF while speaking at the Aquatic Plant Management Society meeting in 2001. As the Herbicide Branch Chief in the Registration Division, Office of Pesticide Programs (OPP) in the EPA, I was responsible for the registration of pesticide chemical uses dealing with the control of plants, including

Other EPA concerns include the toxicity of pesticides in water to non-target organisms, plus other water issues such as swimming and irrigation.

Amendments between 1972 and 1988 to the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), which governs use of pesticides in the United States, resulted in increased data requirements in order to better understand the risk of pesticide uses. Because of these additional

(Continued page 14)

PERSPECTIVES ON THE AERF

(Idaho - Continued from page 12)

detected. In response to this resource management challenge, ISDA asked the AERF to assist the state in developing a “Zebra/Quagga Mussel Exclusion Strategy and Contingency Plan.” Carlton Layne (AERF) and Dr. Bill Haller (UF) convened a panel of control technology experts in early 2011 to advise the state and associated stakeholders on measures that should be taken to prepare for a zebra or quagga mussel outbreak. The multidisciplinary AERF panel was asked to examine Idaho’s waterbodies on a case-by-case basis. Recommendations to the state and its stakeholders provide a “first of its kind” summary of available control technology options and an assessment of Idaho’s technical and regulatory gaps, including state and federal permitting and endangered species concerns.

Idaho has accomplished much over the last 5 years, but it is not without the help and encouragement from many professional biologists, scientists and

control technology experts. One of the strengths of the AERF is its ability to pull the right multidisciplinary group together to complete a task or work through a problem.

Carlton Layne is an excellent facilitator and has the ability to make everybody feel comfortable in expressing their opinions. The State of Idaho would like to give special thanks to Dr. Bill Haller (UF), AERF Executive Director Carlton Layne, Dr. John Madsen (Mississippi State University) and Kurt Getsinger (USACE). These individuals have spent countless hours providing technical assistance and guidance to ISDA staff via the AERF. They are also good at reminding us that prevention is the right thing to do and that our efforts to protect the state’s waterbodies are on track. We hope to continue our positive relationship with the AERF for many years and look forward to working together as we face new challenges in invasive species management.

Amy Ferriter is the Invasive Species Coordinator for the State of Idaho. Prior to relocating to Boise in 2005, she worked as a Senior Environmental Scientist in the Operations and Maintenance Department at the South Florida Water Management District for nearly 14 years. She worked on several wetland species such as melaleuca and lygodium in the Everglades. She has enjoyed developing new invasive species programs in Idaho and is learning about water management in the West.

The AERF has conducted almost 50 educational symposia and special presentations on regional issues around the country, utilizing experts from a wide variety of disciplines.

(EPA - Continued from page 13)

provided information on how the EPA weighs the risks of pesticide use to the user, the environment (wildlife and water) and the public at large against the benefits. I have also emphasized that the EPA only authorizes a pesticide use when its labeling will allow its use in a manner that protects health and the environment and I have stressed that a pesticide may be chosen to control aquatic weeds as long as the label instructions are followed.

As discussed above, the AERF brings together state and federal agencies,

academia and industry to address the problem of increasing aquatic invasive plants. There is an ongoing need for new and safer chemistry, as well as a requirement for new data and information to ensure safer use of old chemistry. Through the efforts of all involved, seven new chemicals have been introduced since 2003 and all older chemical labels have been revised based on updated data requirements. In addition, one extremely risky chemical is being replaced with new alternatives.

Donald Stubbs retired from the EPA in 2009 after 35 years of service. He spent his entire career in the Office of Pesticide Programs and dealt with all aspects of pesticide registration and reregistration. He held several management positions and retired as Associate Director of the Registration Division. He also served as Chairman of the OPP Labeling Committee.

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Biology and Control of Aquatic Plants

LYN A. GETTYS, PH.D.

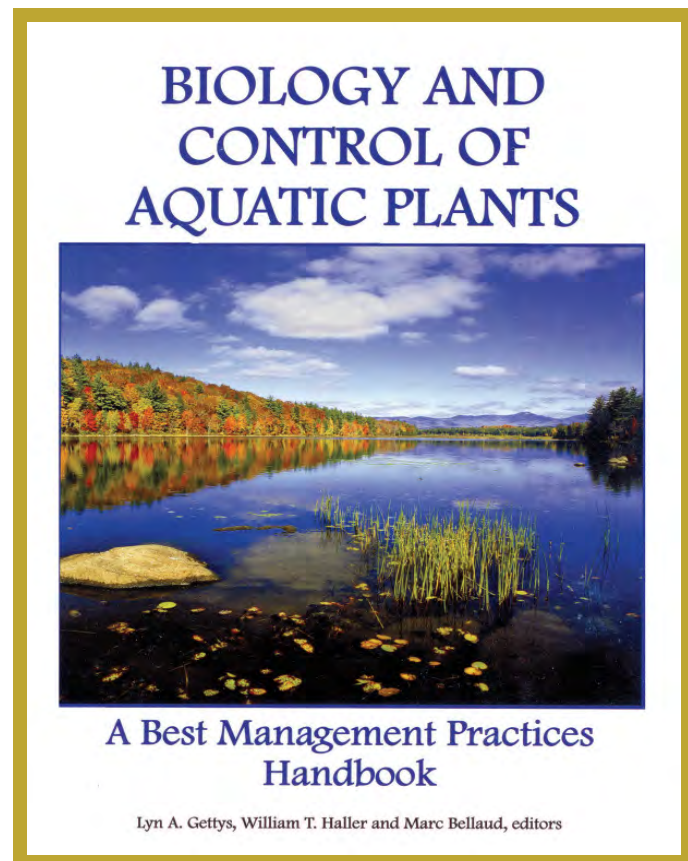
ASSISTANT PROFESSOR - AQUATIC AND WETLAND PLANT SCIENCE, UNIVERSITY OF FLORIDA

The Aquatic Ecosystem Restoration Foundation (AERF) published an updated and greatly expanded edition of its popular aquatic plant management handbook in late 2009. This new edition of the best management practice (BMP) document was written with the shoreline property owner in mind. The BMP was the result of a year-long collaborative project and includes chapters on problematic aquatic plants, ecosystem management and weed control written by internationally recognized authorities. Since its release, approximately 10,000 printed copies have been distributed and the online PDF version has been accessed countless times. A third, expanded edition of the BMP is currently in the works. The new edition will include more regional weed species and the latest updates on species selective management tools and technologies.

The first five chapters of the handbook describe the impact of invasive plants on aquatic biology and on the organisms that share the aquatic habitat, including fish, waterfowl, water birds and mosquitoes. Chapters 6 through 11 focus on methods to control aquatic weeds and outline cultural, physical, mechanical, biological and chemical control of invasive aquatic plants. Chapter 12 describes the biology and management of algae, whereas Chapter 13 is a collection of monographs of ten common invasive aquatic weeds.

A number of appendices are included in the handbook and these are certain to be valuable resources that can facilitate communication with homeowners. For example, the extensive testing protocols required by the EPA for registration of pesticides are outlined, along with a great variety of questions and answers related to pesticide use that you are likely to encounter during your interactions with the public. These appendices provide valuable information that can help you address customer concerns about the safety of herbicides in the aquatic environment. A step by step outline describing how to develop a lake management plan is included, along with a manager's definition of aquatic plant control. Valuable information for aquatic herbicide applicators includes herbicide application methods, a listing of a number of aquatic herbicides grouped by common name and other useful tools.

Biology and Control of Aquatic Plants: A Best Management Practices Handbook is a great addition to any aquatic plant manager's library and is a handy reference you can consult as you plan and execute aquatic plant management activities. In addition, color photographs and illustrations throughout the handbook provide visual examples of the topic under discussion, which can be especially useful for laypeople and folks new to aquatic weed management. A digital version of the handbook is available on the AERF website. Hard copies are also available free of charge from the AERF – just send a request to Carlton Layne at clayne@aquatics.org. In addition to your personal use of this handbook, it can serve as a promotional tool and be given to your customers to educate them about aquatic ecosystems. Bulk orders are available for a nominal shipping and handling charge and may be placed through Carlton Layne.



Regulatory Interactions: A Success Story

KURT D. GETSINGER, PH.D.

US ARMY ENGINEER RESEARCH & DEVELOPMENT CENTER, VICKSBURG, MS

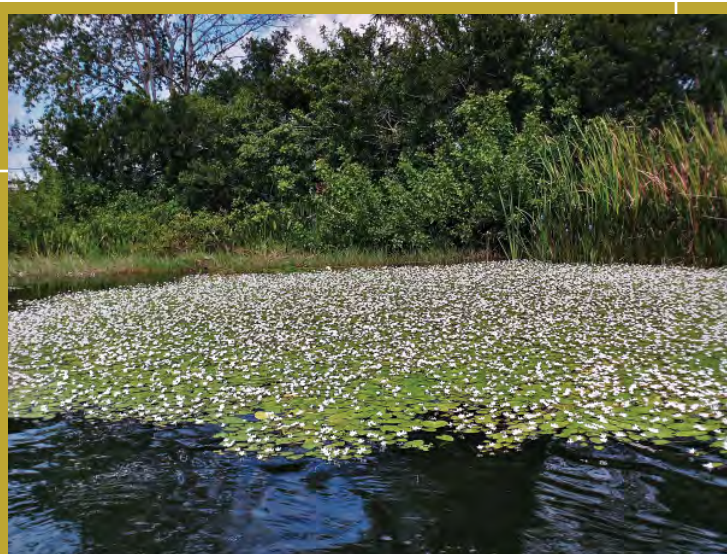
Aquatic weeds have been invading US waterways for many years, resulting in significant costs to man and the environment. These infestations cause environmental damage to lakes, reservoirs, wetlands and rivers by decreasing native plant communities and biodiversity, degrading water quality and fish and wildlife habitat, and negatively impacting habitat of threatened and endangered species. Because herbicides are cost-effective and can frequently be used in a species-selective manner, they are an important tool in the control of invasive aquatic plants.

In 2001, only five herbicide active ingredients were registered by the US Environmental Protection Agency (EPA) for national use in aquatic sites, and some major species of invasive plants could only be controlled by one these products. In addition, some of the most problematic plants developed a tolerance to old, previously effective chemistries and new invasive species were entering various regions of the US. Therefore, new herbicides were needed to effectively control aquatic weeds.

A solution to the country's expanding invasive plant problem required an innovative collaboration among key federal and state agencies, academic institutions and the private sector. An alliance of key organizations involved in the study and management of invasive aquatic plants was forged in 2004 to educate each group on the data required to support aquatic use pesticides.

Allied Federal agencies include the EPA, the US Army Corps of Engineers (USACE), the US Department of Agriculture (USDA), the US Bureau of Reclamation (USBR) and the US Fish and Wildlife Service (USFWS). The University of Florida's Center for Aquatic and Invasive Plants (through Dr. Bill Haller), plays a major national role in applied academic support, while other institutions support the effort on a regional basis. These supporting universities include California-Davis, Clemson, Colorado State, Louisiana State, Mississippi State, NC State, Purdue, Virginia Tech, Washington and Washington State. Private sector collaborators include the Aquatic Ecosystem Restoration Foundation (AERF), numerous lake management companies and herbicide registrants and distributors.

To coordinate these activities, an aquatic subject matter expert (SME) serves part-time with the EPA Office of Pesticide Programs (OPP) Registration Division, Herbicide Branch, in Crystal City, VA. Dr. Kurt Getsinger of the US Army Engineer Research and Development Center (USAERDC) has held this SME position since February 2004, working on a regular basis with Don Stubbs, and recently Dan Kenny of the Herbicide Branch. The primary function of the SME position is to interact with and educate OPP personnel on the needs, use patterns and dissipation characteristics of aquatic herbicides and algaecides to manage invasive plants in public water bodies. Other issues addressed include potential impacts of herbicides on threatened and endangered species, enhancement of fish and wildlife habitat, and consequences and implementation of the National Pollutant Discharge Elimination System as it pertains to aquatic treatments.



Crested Floating Heart

Photo by Lyn Gettys

The SME works closely with technical personnel of the allied groups above to provide EPA personnel with group meetings, one-on-one interactions and annual field trips to regions of the US suffering from the worst aquatic weed infestations. These trips highlight regionally significant aquatic weed problems, current solutions and needs for new products. Field visits have included water bodies in the states of CA, WA, MN, WI, MI, MA, CT and FL.

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Looking Forward: The Next 15 Years

MICHAEL S. RIFFLE, PH.D.

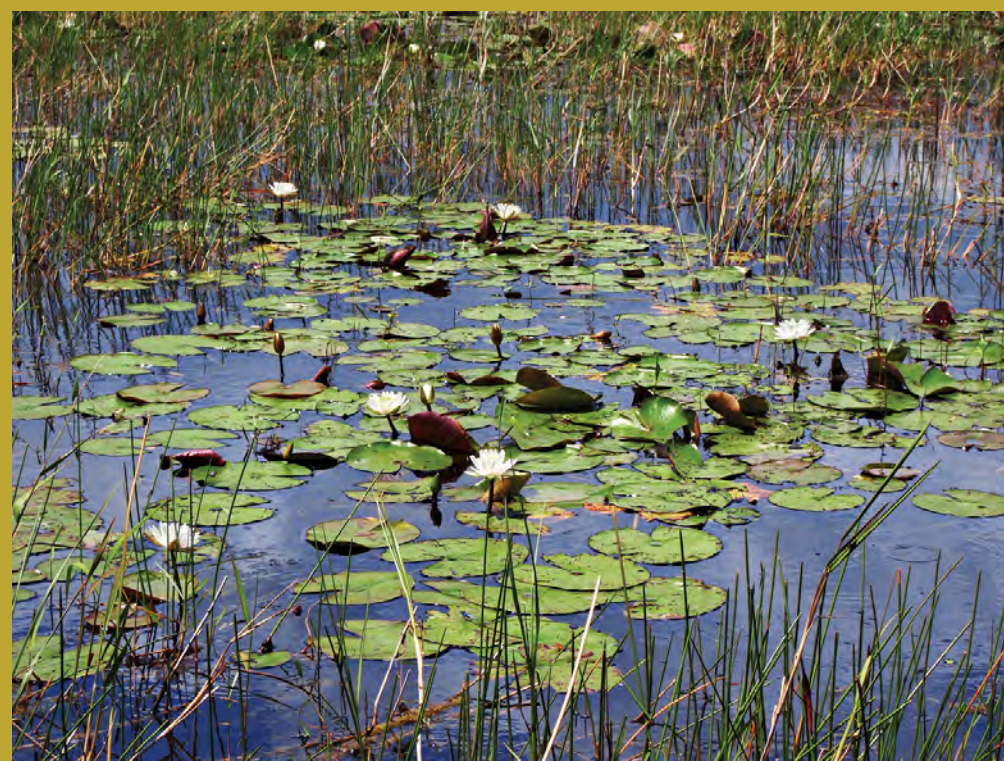
PRESIDENT, THE AQUATIC ECOSYSTEM RESTORATION FOUNDATION

When I was asked to predict the future direction of the Aquatic Ecosystem Restoration Foundation (AERF), I realized that our goals - for the past and present - are perfectly suited to fostering the future of aquatic plant management. These goals have remained mostly unchanged throughout the AERF's history and are as follows:

1. Provide information to the public on the benefits and value of plant management in the conservation of aquatic ecosystems based on accepted and validated best management practices, including the use of herbicides, algacides, mechanical and biological control.
2. Provide information and resources to assist regulatory agencies and other entities making decisions that impact aquatic plant management.
3. Provide funding for research to study applied aquatic plant management at major universities.

The Board of Directors and sponsors of the AERF have worked diligently to develop and implement specific tactics to achieve these goals. We meet on a regular basis to review these goals and tactics and make adjustments to address the needs of the industry.

To address our first goal of public education and outreach, we have developed and published "Biology and



Lake Okeechobee

Photo by Kate Wilson

Control of Aquatic Plants, a Best Management Practices Handbook." We have made this book available to the public to provide them with information regarding the benefits of aquatic ecosystem conservation and aquatic plant management. The first edition of this handbook became one of the most widely consulted references in the aquatic plant management community and has become a staple for agency resources managers and regulators. We undertook an extensive revision of the handbook in 2009 and specifically designed this second edition with water resource managers, water management associations, shoreline owners, and customers and operators of

aquatic plant management companies in mind. This document, available in both hardcopy and electronic forms, has also been well received by our target markets and regulatory agencies, including the US Environmental Protection Agency (EPA). In fact, the second edition of the handbook has been so popular that we are updating it with new information and will soon publish a third edition. Our goal in preparing this handbook is to provide basic, scientifically sound information to assist decision makers with their water management questions. This is a signature document published by the AERF and our members are rightfully proud of it.

(Continued page 19)

(Regulatory Interactions- Continued from page 17)

This aquatics SME position has been so successful that it spurred the creation of similar positions at EPA, in areas of terrestrial weed control, insect pests, and pathogens.

These positive interactions with EPA encouraged registrants to screen and develop new herbicides for potential use in aquatic sites. To date, this alliance has resulted in the registration of seven new active ingredients, two of which are reduced risk pesticides. These new products include compounds to control fluridone-resistant hydrilla in Florida, and to substantially reduce invasive spartina in the Willapa Bay National Wildlife Refuge in Washington State. In addition, a product was registered for use in irrigation canal systems of the western US – the first new chemistry for this unique use pattern in many decades. This canal work was supported by the USDA's IR-4 Project and the National Institute for Food and Agriculture, the EPA Chemistry Advisory Council, the USAERDC and the AERF. Also, all old aquatic use chemistries were

successfully defended in the re-registration process and will be supported in the new registration review process over the coming years.

In collaboration with the AERF and academia, the EPA and the USAERDC have organized and conducted outreach and education programs and workshops for federal and state agency personnel, lake associations, chemical applicators, professional societies and the general public on the prudent use of aquatic herbicides. These regional outreach programs have benefited thousands of individuals in the Great Lakes, Gulf Coast, Northeast and Western regions of the US. This coordination, collaboration and education in the product registration process has been unprecedented in the field of aquatic plant management. The future of maintaining cost-effective and environmentally compatible aquatic herbicides will depend upon the continuation of this effort.

(Looking Forward - Continued from page 18)

The goals developed by the AERF are broad and encompassing enough to allow us to be flexible, reactive and proactive. In January 2009, the 6th Circuit Court of Appeals vacated the EPA's 2006 rule which stated that National Pollutant Discharge Elimination System (NPDES) permits were not required for pesticide applications in, over or near US waters when pesticides are used in compliance with the existing federally authorized label. This ruling directly affects many products used in aquatic plant management and could prove to be an undue burden, particularly to small companies that use aquatic herbicides. In accordance with our second goal, the AERF worked with other industry and regulatory entities to provide information and resources to develop positions that our industry supports. We have also provided information to regulatory agencies, including the EPA, that challenges many assumptions made in the original draft document.

In accordance with our second goal, the AERF provides access to a Technical Advisory Committee (TAC) that is composed of scientists from universities and government agencies. These scientists have extensive first-hand practical experience and we rely on them to provide guidance to the Board and members when important questions are asked. In fact, the Board of the AERF frequently turns to this committee for technical advice and the TAC allows us to provide careful and measured answers.

In summary, the Board of Directors and members of the AERF currently have three major goals that we consider important to the industry. These goals are reviewed often and updated with new information as necessary. By limiting ourselves to three major goals, we are able to remain focused and use the resources available to us to in the most effective way possible. There are a few new topics on the horizon that we are already working on, including determining the potential impact of the Endangered Species Act and how the Act will affect NPDES implementation. This conveniently fits into our second goal and we hope to provide information and resources to assist regulatory agencies and other entities as they make decisions regarding this and other topics that could affect aquatic plant management.

Please stay active and look for ways to support aquatic plant management. Keep your eyes and ears open for new information and pass it along to your AERF Board and Sponsors. After all, we're all in this together!

Spreading the Word

DAVID G. PETTY
PRESIDENT, NDR RESEARCH

With the arrival of the 15-year anniversary of the Aquatic Ecosystem Restoration Foundation, we can assume our core constituency knows us pretty well. Now we are looking for ways to spread our message and mission further afield. One venue to reach a wider audience is this very publication, which will not only be mailed to all members of the Aquatic Plant Management Society and Regional Chapters, but also to members of the Weed Science Society of America and the Society of Wetland Scientists. On behalf of the AERF, I would like to thank these organizations for providing us with their member mailing lists for this one-time use. Included in the mailing list for this publication are members of the National Invasive Species Council and the Association of American Pesticide Control Officials, along with selected smaller groups and individuals.

But perhaps the most important audience we need to reach include the lake-front home owner and angling communities, who have a long history of aquatic weed issues and a need for science-based solutions to those weed problems. To help us reach this audience, the AERF

has opted to sponsor a professional bass fisherman, Jeff Holland.

Jeff is a life-time member of the Bass Anglers Sportsman Society (BASS) and an active Bassmaster Southern Opens competitor. He is a former member of the Florida Benthological Society, and an active member of the Florida Chapter of the American Fisheries Society, Florida Aquatic Plant Management Society and Florida Lake Management Society. For six years he served as the Editor for *Aquatics* magazine for the Florida Aquatic Plant Management Society and currently serves as a Board Member and Editor for the Florida Lake Management Society.

An employee of the Reedy Creek Improvement District for over 23 years, Jeff has extensive experience managing progressive fisheries, lake and aquatic plant management programs, and is an ideal bridge between the angling and aquatic weed control communities. Through competition in professional fishing tournaments with the AERF logo proudly displayed on his boat and jacket, Jeff has already garnered a lot of attention and interest in the AERF.



Jeff Holland

Photo courtesy of Jeff Holland

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