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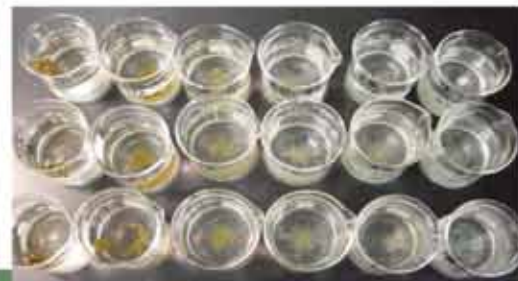
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When is a tuber not a hydrilla tuber? When it has legs and floats on the surface! Pictured are human tubers floating downstream of the KP Hole County Park on the Rainbow River in Marion County. See related article on page 9. Photo by Chuck Cichra.



Giant salvinia. See related article on page 5.

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BY KAREN BROWN

**CORRECTION:** In our last issue, we referred readers to Amazon.com for purchasing the book, *Silver Springs – The Underwater Photography of Bruce Mozart*. Signed copies of the book are available from Mr. Mozart's website at [www.mozertstudio.com](http://www.mozertstudio.com) and it is preferred that books and photographs be purchased at this website.



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# Discovery and Treatment of Giant Salvinia in Northwest Florida

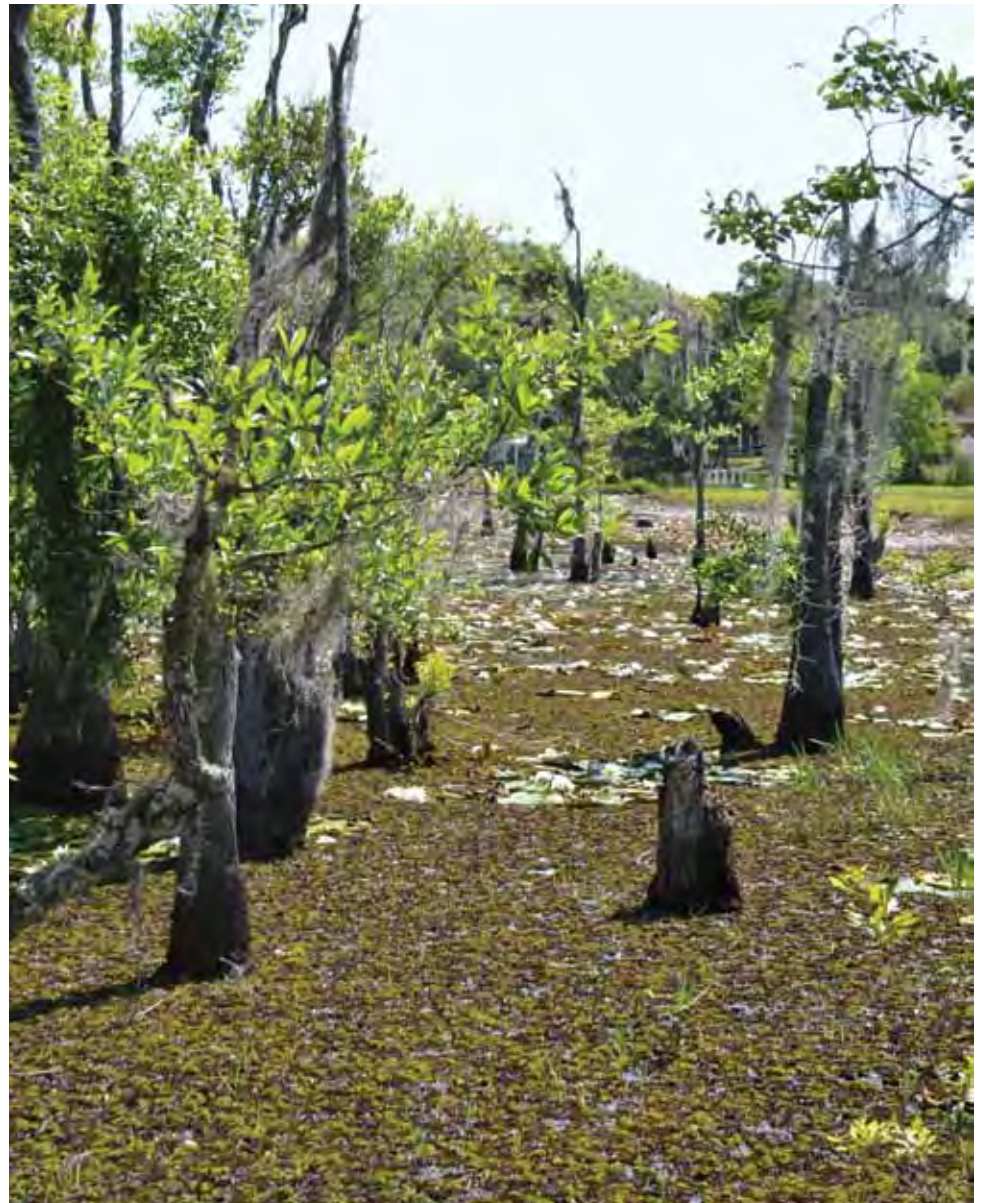
By Matthew Phillips and  
L. Scott Jackson

Photos by Matthew Phillips and  
Derek Fussell

Giant salvinia (*Salvinia molesta*) is an invasive free-floating aquatic fern from South America that is rarely observed in Northwest Florida. The species is on the Federal Noxious Weed List and the Florida Prohibited Aquatic Plants List. After a site visit with a pond owner, Scott Jackson,

a University of Florida/IFAS Extension Agent, identified *Salvinia molesta* in the Bay County pond and notified the Florida Fish and Wildlife Conservation Commission's (FWC) Invasive Plant Management Section. Their staff confirmed the identification of the specimen and a second voucher specimen was transferred to the Godfrey Herbarium at Florida State University.

Jackson reported the observation on the Early Detection and Distribution Mapping System (EDDMapS) housed at the University of Georgia's Center for Invasive



Salvinia infestation in Bay County pond on May 21, 2013.



Species and Ecosystem Health. This is only the second reported occurrence of giant salvinia in Northwest Florida. It is a high control priority for the state of Florida due to its high invasive potential.

Giant salvinia has caused severe economic and environmental problems in Texas and Louisiana and in many countries including New Zealand, Australia, and South Africa. Giant salvinia grows rapidly and produces a dense floating canopy on the surface of ponds, lakes, and rivers. It aggressively spreads by vegetative fragments and thrives in slow-moving, nutrient-rich, warm fresh water. Floating mats of giant salvinia shade out native submersed vegetation and degrade water quality. Mats also impede boating, fishing, swimming, and clog water intakes for irrigation and electrical generation.<sup>1</sup> *Salvinia molesta* has been listed in *The World's Worst Weeds – Distribution and Biology*<sup>2</sup> since 1977. It was recently added to *100 of the World's Worst Invasive Alien Species*, an all taxa list compiled by invasion biologists with the Global Invasive Species Database.<sup>3</sup>

**Table 1.** Penoxsulam concentrations in ppb taken 7 days after initial application and every 1 to 2 weeks thereafter for approximately 60 days.

SAMPLE DATES	6/19/2013	7/2/2013	7/10/2013	7/17/2013	7/31/2013	8/14/2013
Sample site 1	33.4	13.3	4.6	19	10.3	14.7
Sample site 2	21.5	16.2	4.7	15.6	10.3	11.9
Sample site 3	17.9	8.3	1.9	17.8	8.8	11.1

Initial treatment took place 6/12/2013; bump treatments to adjust for rain volume occurred on 7/10/2013 and 8/8/2013.

The most distinguishing physical characteristic of *Salvinia molesta* is the basket- or egg beater-like hairs on the upper leaves (a hand lens is required) which distinguishes it from common salvinia (*Salvinia minima*). Common salvinia also has hairs on the upper leaf surface but they do not form basket-like structures at the tips. The upper leaves of both species repel water.

The location of the giant salvinia infestation found by Jackson is precariously close to Deer Point Lake, a 5,000 acre water

body that is the main source of drinking water for Panama City and surrounding Bay County. The 2.5 acre infestation was on a 3.6 acre divided pond and both sections were treated. Treatment of the infestation was initiated by FWC in June 2013 at no expense to the property owners.

FWC biologists created a treatment plan for the pond that originally consisted of the use of two registered aquatic herbicides: Galleon SC (penoxsulam) for the *Salvinia molesta* that was free-floating in the pond, and Reward (diquat dibromide) for the *Salvinia molesta* that was on moist soils and would not be exposed to the Galleon application. The original application of Galleon SC was planned for 20ppb and the goal was to maintain the concentration above 6 ppb for 60 to 90 days. Diquat at ½ gallon per acre was to be sprayed on all of the salvinia that would not be exposed to the penoxsulam.

Staff applied the penoxsulam and diquat in an initial treatment on June 12, 2013. Penoxsulam was applied as a submersed application and the diquat as a foliar application. Table 1 shows the penoxsulam concentration taken 7 days after application and every one to two weeks thereafter for approximately 60 days. One record-breaking rain event occurred during the week of July 4<sup>th</sup> that required staff to make an additional application to bring up the penoxsulam concentration. This “bump treatment” was conducted immediately following the July 10<sup>th</sup> collection of samples. The high increase in water levels in the pond caused all of the salvinia to become exposed to the penoxsulam so there was no need to continue with diquat applications. There



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was an additional small bump treatment to adjust for additional rain volume on August 8<sup>th</sup>.

The following series of photos shows the progression of the treatment over time. The pond continues to be monitored and, to date, we have found no living *Salvinia molesta*. We will continue to monitor the pond to make sure there is no re-establishment of giant salvinia. Investigations continue to try and learn

more about the introduction of the pernicious species to this isolated pond.

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<sup>1</sup> Giant salvinia (*Salvinia molesta*), Weed Alert, Florida Fish & Wildlife Conservation Commission, Tallahassee, FL, 2 pp.

<sup>2</sup> *The World's Worst Weeds – Distribution and Biology*. 1977 and 1991. L.G. Holm, D.L. Plucknett, J.V. Pancho, and J.P. Herberger. 609 pp.

<sup>3</sup> Alien species: Monster fern makes IUCN invader list. 2013. Nature 498:37. G.M. Luque, C. Bellard, et al.



Fig. 1: Initial treatment on June 12, 2013.



Fig. 2: Higher water level lowered penoxsulam concentration, requiring first bump application July 10, 2013. (Photo taken September 7, 2013.)



Fig. 3: No visible *Salvinia molesta*; note continued high water level requiring second bump application. (Photo taken September 25, 2013.)



Fig. 4: No signs of living *Salvinia molesta*. (Photo taken October 30, 2013.)





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# Recreational Impacts on the Rainbow River

By Chuck Cichra, Stephen Holland, Jesse Stephens and Amanda Croteau  
Photos by Chuck Cichra

The Rainbow River is one of Florida's largest spring-fed rivers and is designated as a National Natural Landmark, an Outstanding Florida Water, and an aquatic preserve. The headspring is located in southwest Marion County, and the river flows about 5.7 miles through Dunnellon into the Withlacoochee River and out to the Gulf of Mexico.

Although the State of Florida and Marion County own land along the river, most of the riverbank is under private ownership. In recent years, recreational use has increased and, as a result, potential conflicts between user groups have risen. There is also concern that excessive recreational use may damage the water quality and ecology of the river. To aid natural resource personnel in making sound management decisions, a study was undertaken to scientifically document (1) the types, locations, and degree of recreational use and (2) the effect of recreational use on the natural environment.

Dr. Chuck Cichra and Dr. Stephen Holland performed the study during 2011–2012. They compared their results to those of their 1994–1995 study of the same system.

## Human Dimensions Study

River use was documented from May 11, 2011 to May 10, 2012 using six time-lapse camera-recorders stationed along the river. Three were located upstream from the KP Hole County Park and three were downstream. The northernmost camera was about 600 feet south of the headsprings park boundary and just south of the Rainbow Springs resident's beach and boat ramp. The southernmost camera was about 150 feet north of the Highway 484 bridge across the river from the tuber take-out point. Six user types were counted: canoes, kayaks, motor boats, commercial SCUBA boats, divers/snorkelers/swimmers, and



Uprooted plants and suspended sediments from motor boat activity.

flotation tubes/tubers.

Estimated total annual numbers were 5,500 canoes, 11,000 kayaks, 6,600 motor boats, 9,000 divers/snorkelers/swimmers, 1,000 SCUBA boats, and 84,000 tubers. Comparing these annual use estimates with the annual estimates of the 1994–1995 user count, the following growth increases were observed between the two studies. For tubers, there has been a 400% increase in number of tube trips, 228% increase in number of motor boat trips, and an approximately 1,500% increase in the number of canoe/kayak trips. See Table 1.

## Environmental Study

### Geographic and temporal differences in aquatic plant communities

To document geographic and temporal differences in aquatic plants, 20 fixed transects initially sampled in 1994–1995, along with 6 new transects, were sampled three times in 2011–2012. The following was documented:

- Eighteen species of aquatic macrophytes, along with *Chara* sp., *Lyngbia* spp., and

other filamentous algae, were sampled.

- Mean percent coverage and percent occurrences of major plant taxa were similar among all three transect data sets (spring 2011, fall 2011, and spring 2012). This indicates seasonal stability of the submersed aquatic plant community.
- *Sagittaria kurziana*, *Hydrilla verticillata*, *Vallisneria americana*, *Potamogeton illinoensis*, *Utricularia* spp., and *Fontinalis* sp. had mean coverage (areal coverage per grid) of at least 15% in all three sampling events in 2011–2012.
- Strap-leaf sagittaria (*S. kurziana*) was the most dominant (areal coverage greater than 50% in 10 of 26 transects over all seasons). Mean coverage for strap-leaf sagittaria was greatest below the KP Hole County Park, an area characterized by shallow depths, sandy substrate, and high recreational use.
- Strap-leaf sagittaria, along with hydrilla (*H. verticillata*) and *Najas guadalupensis* were the most common species (occurring in 22 to 25 of the 26 transects

Table 1. Estimated Total Annual Numbers

2011–2012		Growth (%) Increase from 1994–1995
Canoes	5,500	1,500%
Kayaks	11,000	1,500%
Motor Boats	6,600	228%
Divers/Snorkelers/Swimmers	9,000	1*
SCUBA Boats	1,000	2*
Tubers	84,000	400%

1\* Not counted in 1994–1995 study.  
2\* SCUBA boats included in motor boat category in 1994–1995 study.

over all seasons) in the river.

- Tapegrass (*V. americana*) was widespread (occurring in 16 to 20 of the 26 transects), but was never dominant in any single transect.
- Illinois pondweed (*P. illinoensis*) was found exclusively in the headsprings

and was fairly common within this area during both the 1994–1995 study and the current study. It was also found at a new transect just below the state park boundary.

- Red ludwigia (*Ludwigia repens*) was found in the downstream portion of the state park and the 1-mile section of

river immediately downstream from the park boundary. It was most common immediately above and below the state park boundary.

- Hydrilla was found to be widespread throughout the river, occurring in 25 of 26 transects. It was absent from transect 2 (headsprings area) in all three sampling events. Hydrilla has expanded its range within the river between the 1994–1995 study (15 of 20 summer and 16 of 20 fall 1994 transects; 17 of 20 spring 1995 transects) and the present study.
- In 1994–1995, hydrilla mean coverage for any single transect exceeded 25% at only two transects in the upper headsprings. In 2011–2012, hydrilla was never found to exceed 25% coverage at any transect. Abundance (percent coverage) declined in the headspring and downstream areas, while increasing somewhat in the midstream portions of the river. Areas purposely cleared of vegetation (i.e., near boat docks, swimming areas) were rapidly colonized by hydrilla.

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- In the transect data calculations, bare substrate represented areas covered by sand, rock, concrete, or detrital materials. All transect samples had a mean coverage of at least 2.5% bare substrate. Nearly all (67 of 78) had a mean coverage of at least 10% bare substrate. Most often, submersed macrophytes seemed to be absent due to unsuitable bottom substrate such as limestone outcroppings.
- Few areas throughout the river appeared to be devoid of vegetation due to recreational activity. Bare substrate due to motor boats (propeller scars) was observed in the river; however, far less than 1% of bare substrate was caused by propeller damage.

### Human Activity and Aquatic Plant Relationships

Human activities can affect the aquatic plant community by tearing and uprooting plants, sending them floating downstream. This portion of the study was designed to determine the type and degree of damage

to the aquatic plants in response to the amount and type of human activity. Plant samples were collected on ten occasions, each with a various degree of user activity.

All sampling was conducted downstream from the KP Hole County Park. This site was used in the 1994–1995 study and again in 2011–2012, so that current plant damage estimates could be compared to historical values. Triplicate plant samples were collected a minimum of four times throughout each day on a 2 to 3-hour schedule from early morning (prior to human activity) to midafternoon (after most recreational activity ceased). Each replicate sample consisted of collecting all floating vegetation captured by a 2-meter wide x 1-meter deep, 6-mm nylon mesh drift net. All vegetation collected was identified and sorted to species. *S. kurziana* and *V. americana* were also sorted according to the type of damage (tearing vs. uprooting). All vegetation groups were then wet weighed and recorded as wet weight per net per hour.

The weight and type of vegetation collected via drift nets were analyzed in

conjunction with the amount and type of upstream human activity. Major findings include:

- *S. kurziana* comprised 89.2% by weight of all plants collected, almost identical to the 88.6% in 1994–1995. *V. americana* and hydrilla were the next most abundant, comprising approximately 6% and 2% of the total weight, respectively. These two species represented approximately 4% each in 1994–1995.
- Composition of drifting plants was similar on all ten sampling days except for the 24 August 2011 sample, when hydrilla represented 11% of the submersed plants collected by the nets.
- The composition of plant taxa collected with the nets was similar to the composition of plants upstream of the sampling site, indicating that recreational activity is not selectively damaging any particular submersed plant species.
- Early morning values for wet weight of drifting plants were generally less

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than 200 grams per net per hour. During high-use days, the biomass of damaged plants increased as user activity increased; the mean wet weight of damaged plants reached levels up to 3,400 grams per net per hour.

- Biomass of drifting plants was significantly and positively correlated to the number of tubers, power boats, canoes, and kayaks observed upstream. Motor boats had the strongest relationship.
- Although plant damage is occurring due to recreation, the amount of damage is insignificant in comparison to the total biomass of plants in the river.

Because recreational activity of several user groups (i.e., tubers, boaters, canoes, and kayaks) occurred simultaneously, it is difficult to determine the exact amount of damage attributed to each user group. However, the strongest association with drifting plants, as well as observational evidence, indicates that the majority of the damage was due to motor boats. In other words, the behavior of a small number of irresponsible motor boaters resulted in a large amount of damage to the aquatic plant community.

## Direct Observation of the Effects of Motor Boating on the Aquatic Plants

Motor boating directly impacts aquatic plants by cutting off their upper portions or by completely dislodging plants from the substrate. While on the river, staff observed and documented motor boating activity and plant damage to determine if the quantity of damage was related to specific types/sizes of boats/motors or to operator behavior.

An attempt was made to observe all passing motor boats and to take digital images of the facing side and stern of each boat. The location, date, and time of observation was recorded, along with the make, model, length, and type of each boat, if available; the make and horsepower of each motor; the type of activity (motoring, fishing, drifting, etc.); the direction of movement (up-stream, down-stream, cross-stream); location within the channel; the extent of plant damage (none, minimal, medium, and maximum); operator behavior; and any reasons as to why the damage or lack of

damage occurred. The following summarizes major findings:

- A total of 269 motor boats were observed during 2011–2012, and categorized into eleven “boat types”. The most common boats observed were pontoon, Jon, and bay boats (82%).
- No damage was observed from any of the Gheenoe/Ganoe, inflatable, airboat, skiff/flats boat, or Jet Ski categories.
- Pontoon boats were by far the most popular boat type. Of the 126 pontoon boats recorded, 86.5% were not observed to cause damage.
- When all recorded boats are combined, regardless of type or length, the highest percentage of damage was caused by boats with 76 to 100 horsepower engines. Within this category, 4 of the 7 boats caused plant damage due to operator behavior, and not simply due to the size of the engine.

## Direct Observation of SCUBA Divers

An attempt was made to document if any particular type of dive activity (e.g., offloading or loading of divers, location of dive boats, anchoring of dive boats, standing of divers in shallows while receiving instructions, and actual diving) could be related to type or quantity of plant damage.

Divers were not found to consistently cause damage (i.e., uprooting vegetation or breaking off pieces of vegetation) although they were observed moving into vegetated areas to limit congestion during periods of high use. These areas included vegetated islands in the middle of the river or shallow, littoral vegetated areas.

The most noted and obvious damage to vegetation was from boats, trying to avoid divers. On low-use days (i.e., low number of divers, snorkelers, and other users), boats would stay in the deeper portions of the river, causing no damage to vegetation. On high-use days, boats moved into shallow areas to avoid kayakers, divers, snorkelers, and dive boats. Movement into shallow areas, along with movement up- or down-stream, uprooted vegetation. Movement

## Protect Florida's Freshwater Aquatic Preserves

Currently, Florida law protects seagrasses located within marine aquatic preserves from “scarring” by motor boats. Section 253.04 of the Florida Administrative Code states that

“A person operating a vessel outside a lawfully marked channel in a careless manner that causes seagrass scarring within an aquatic preserve established in ss. 258.39-258.399, **with the exception of the Lake Jackson, Oklawaha River, Wekiva River, and Rainbow Springs aquatic preserves** [emphasis added], commits a noncriminal infraction, punishable as provided in s. 327.73. Each violation is a separate offense.” “Seagrass” means Cuban shoal grass (*Halodule wrightii*), turtle grass (*Thalassia testudinum*), manatee grass (*Syringodium filiforme*), star grass (*Halophila engelmannii*), paddle grass (*Halophila decipiens*), Johnson’s seagrass (*Halophila johnsonii*), or widgeon grass (*Ruppia maritima*). “Seagrass scarring” means destruction of seagrass roots, shoots, or stems that results in tracks on the substrate commonly referred to as prop scars or propeller scars caused by the operation of a motorized vessel in waters supporting seagrasses.”

This law should be changed to include the Rainbow Springs Aquatic Preserve, along with the other freshwater aquatic preserves. “Seagrasses” could be expanded to include native freshwater species of aquatic plants such as *Sagittaria kurziana* and *Vallisneria americana*.



of boats into vegetated areas produced more damage to the aquatic vegetation than movement of divers into the same, vegetated areas.

### Mapping and Recovery of Prop Scars

All propeller scars on the river were located and measured in the fall of 2011. The 61 scars had a mean length of 61 feet and mean width of 1.5 feet.

Of these, 26 prop scars were resampled in spring of 2012. Over the winter, mean width decreased for 10 scars, increased for 2 scars, and stayed the same for 2 scars. Eleven scars completely closed in with regrowth from surrounding plants, primarily *S. kurziana*. Total length decreased for 10 scars, increased for 1 scar, and stayed the same for 3 scars. As with width, 11 scars completely filled in with plants.

### Management Suggestions

Tubers caused damage where they entered and exited the river while out of their tubes. This occurred in limited shallow areas. Any attempt to restrict tubers from these areas will simply cause them to find other areas nearby. Canoers and kayakers caused minimal damage. They readily used ramps, often staying out of the water to enter or exit their boats. It is recommended that access ramps for these users be maintained.

On several occasions, individuals were observed pulling up or cutting aquatic plants. Some of this was legally permitted work. In several cases, hydrilla was being pulled up and allowed to float downstream. Hydrilla quickly grew in denuded areas during the low recreational-use period.

Of all of the user groups, motor boaters have the greatest impact on the river. Damage was done by a small percentage of this group. Some damage was due to the specific configuration of the boats and their engines, but operator behavior had a far greater impact on how much damage occurred.

Based on this study, our recommendation to minimize damage to the river is to educate the boating community.

Continued on the next page



Jesse Stephens sampling plants at Rainbow Springs tuber take-out point.

## Restore Lakes Naturally

An aerial photograph of a large lake with a city skyline in the background. The lake is divided into two sections by a vertical line, showing the effect of aeration system. The left side is murky brown, while the right side is clear blue.

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This can be done by:

1. Providing educational pamphlets:

- To boat owners at the major points of entry to the river – the KP Hole County Park boat ramp and the Highway 41 boat ramp on the Withlacoochee River in Dunnellon
- To residents living on the river, via mail
- To individuals who rent boats via boat rental operators

2. Providing educational kiosks or signage (with photos) at the KP Hole County Park boat ramp and the Highway 41 boat ramp on the Withlacoochee River in Dunnellon, on topics such as:

- Proper way to trim one's motor
- Staying out of shallow areas of the river
- Damage that can be done to plants (photos of prop scars)
- Value of plants to fish and wildlife and water quality of the river
- A map showing major areas of prop scarring

3. Holding meetings with local boating groups or individuals interested in the management of the river.

4. Adding signage to the river. The survey of the prop scars in the river identified two areas that had high densities of damage: the area immediately downstream from the KP Hole County Park and downstream from the state campground tuber take-out. These areas should be marked as "shallow water areas". Additional signage could be placed in the river warning boaters of other shallow areas.

The complete final report for this study is available at: [www.dep.state.fl.us/parks/files/RainbowRiverEnvStudy-9-12.pdf](http://www.dep.state.fl.us/parks/files/RainbowRiverEnvStudy-9-12.pdf)

*Chuck Cichra, Jesse Stephens and Amanda Croteau, UF School of Forest Resources and Conservation, Program in Fisheries and Aquatic Sciences, 352-273-3621, [cecichra@ufl.edu](mailto:cecichra@ufl.edu); and Steve Holland, UF Department of Tourism, Recreation and Sport Management, 352-294-1669, [sholland@ufl.edu](mailto:sholland@ufl.edu). Funding for this study was provided by the Florida Department of Environmental Protection's Division of Recreation and Parks, and the UF/IFAS Center for Aquatic and Invasive Plants.*



Jesse Stephens removing plants from drift net.



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# Mr. Tracy Wood –

## FAPMS Aquatic Plant Manager of the Year

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Mr. Tracy Wood received the distinction and honor of being named the FAPMS Aquatic Plant Manager of the Year. He was nominated by former FAPMS President and coworker, Jerry Renney. Both work for Applied Aquatic Management, Inc. Tracy has worked for Applied Aquatic for more than 25 years and has been a member of FAPMS for 24. In his nomination of Tracy, Jerry stated the following:

During his 25 plus years at Applied Aquatic, Tracy has performed every type of treatment on every species we've managed during the history of the company. His foliar applications covering virtually every emergent and floating species with a need for control number in not just thousands but tens of thousands of acres in the entire state of Florida as well as Georgia, Mississippi and Alabama. In addition, he has participated in many of the largest submersed plant treatments on record.

Tracy has participated in overseeing the stocking of countless thousands of grass carp, monitoring their success and evaluating the need for supplemental efforts. He has been responsible for assuring the maintenance of required fish barriers for many grass carp stockings. He has provided valuable feedback concerning many biological control insects to the managers of public waters while dispatched to every remote corner of the state.

Through the use of chainsaws, machetes, shovels, waders and virtually every type of manually operated tool, he has performed the physical work that is sometimes necessary when no machine other than a man and his two hands can get the job done. And it should be noted that even today in his somewhat "seasoned" years, he never flinches when it comes to getting down and dirty with the weeds.

At Applied Aquatic we pride ourselves with having always been on the cutting edge of developing new techniques. Tracy has forever been involved in all of it. His hands



President Tim Harris presents the award to Mr. Tracy Wood.

have touched the ground floor efforts that paved the way to how melaleuca is now controlled. Our primary style of spray boat, once called Tracy's "Dream Boat" and built with his input, still carries the same reminder by using the letter "D" for dream in all of their numbered identifiers. You can see his touch in all of our spray systems.

In our constantly changing industry, Tracy has always been one of the first to look at new products. If there is a new material, product or technique, Tracy will put them together and see what comes out. In all of his years of service, he has not lost that drive to improve and is continuously performing "that little test" and subsequent evaluation to see what happens. Without that drive, we would miss out.

Not being much for the classroom, Tracy's education has been built the old-fashioned way—in the field. He is an applicator's applicator, the go-to guy to get things done, the cliché without being... well... cliché. Despite his drive for field work, however, he has always maintained his applicator's license in not just Aquatics but Natural Areas and Right-of-Way as well. He never misses an annual meeting of FAPMS and is quick to assist new applicators with any questions they have.

Because we work all over the southeast,

in nearly every public waterbody and private arenas beyond count, Tracy has a long history of interacting with the public. There is always a meeting, always a discussion, always an opinion, always a question. And Tracy has always had an answer. Even if it was "I don't know," Tracy has always made time for the public.

As mentioned earlier, Tracy has never missed an annual meeting of the FAPMS. He can be counted on to be in the room, paying attention, taking notes, interacting with the speakers and vendors and actually learning what is being presented... often while many of us are shamefully having one at Hooters.

You want plant ID? Tracy is always looking, always making sure he has it correct. He has always understood that what we do, what he does, is sometimes permanent. For some species, it is literally life and death and you had better take it seriously because you can't just take it back. The body of work represented by Tracy Wood and his over quarter century in the industry is without compare and should absolutely be recognized.

*Tracy won a plaque and \$500 in addition to the honor of this award. Congratulations, Tracy!*

# 2013 Photo Contest Winners



(Above) First place in the Operations category by Mackenzie Lewis: Gabe Harper doing a cattail treatment at Homestead Miami Speedway, getting it ready for the races. Thank you H.M.S. for the opportunity.



(Left) Third place in the Operations category went to Joyce Hertel with the Fellsmere Water Control District.





(Above) Second place in the Scenic category: A cooter on the Loxahatchee River (River Of Turtles) at beautiful Jonathan Dickinson State Park by Mackenzie Lewis.

(Below) Third place in the Scenic category: Loxahatchee River (River Of Turtles) at beautiful Jonathan Dickinson State Park by Mackenzie Lewis.





## APMS Chapter Updates



### Mid-South APMS

The 32nd Annual MidSouth APMS Meeting was held in Tunica, Mississippi this past September. As we all know, a successful meeting does not occur without hard work from the Board of Directors and all of our committee chairs and members. Thank you to all who contributed to the meeting and made it such a great success. This year a special event was added to the agenda to raise money for the MSAPMS Scholarship Fund. A Scholarship Trap Shoot was held at The Willows Sporting and Clays Center and was well attended. From my point of view, a great time was had by all!

The Society owes a lot of thanks to our outgoing President, Gerald Adrian, for his leadership as President this past year. Gerald has volunteered for many years in MSAPMS and has contributed to its success. A Society like ours is only as strong as the service of its members.

One of the goals of the MSAPMS is to be the voice for aquatic plant management in the MidSouth region. With many members in the Society, we have the knowledge and expertise available to make a difference. Your thoughts need to be voiced and heard!

The next annual meeting will be held in conjunction with the National APMS at the Hilton Savannah DeSoto in Savannah, Georgia, July 13-16, 2014. This is guaranteed to be an extraordinary meeting, so plan to attend and bring the family!

*Submitted by Sherry Whitaker, MSAPMS President, Sherry.L.Whitaker@erdc.dren.mil*



### Midwest APMS

The 33rd Annual Conference of the Midwest Aquatic Plant Management Society (MAPMS) was hosted this year in Cleveland, OH and featured special sessions related to hydrilla expansion into the Great Lakes region, the current science of hybrid watermilfoil, and algae management. The conference kicked off with a unique President's Reception at the House of Blues and ended with the Award's Banquet. Mr. Greg Cheek was recognized as the newest honorary member. Student paper winners were recognized: 1st place to Danielle Grim from Grand Valley State University for her paper on hybrid watermilfoil, 2nd to Justin Nawrocki of North Carolina State University for a paper on monocious hydrilla, and 3rd place to Bradley Sartain of Mississippi State University for his paper on selectivity of herbicides. The research grant was awarded to Justin Nawrocki for his proposal entitled "Factors influencing native aquatic plant re-vegetation success for enhanced sport fish habitat". Congratulations to all those receiving awards (including our Poster Session winners) and to the students for your strong contribution to the program. Thank you to all the speakers, moderators, and any others involved with the meeting planning that resulted in a very successful conference. I would also like to extend a special thanks to all the meeting sponsors because we know our program would not be possible without their generous contributions.

In the past five years, membership has increased from 164 to 237 members. In 2012, the MAPMS hosted their first

ever Strategic Planning Session to self-evaluate programs that are working and areas for improvement. The Board is committed to advancing the Society and proactively continues to evaluate ways to enhance the benefits of membership. The Planning session proved very valuable. Currently, MAPMS is critically assessing how to enhance education and outreach programs. Efforts are underway to update our website, do a makeover of our brand image, and to enhance the already strong support of students. In addition, new outreach materials are being considered such as plant identification charts and a potential document that highlights the benefits of aquatic plant management. Part of this is related to an annual challenge to the sitting President to take on a new education or outreach project. Thankfully, we have a very active Board and Committees that are dedicated to the mission of the Society and can help make this goal a reality. Finally, the Board is considering strategies to ensure the financial stability of the Society based on the model of APMS, and should have some actions for consideration in the coming months.

It is with great regret that we lost a true friend to the Society. Robert "Bob" Johnson passed away on June 4th, 2013. He was a charter member, 4-term President, and Honorary member. The Board unanimously approved renaming the Society's student grant the Robert L. Johnson Memorial Research Grant in his honor and in recognition of his commitment to advance the mission of MAPMS. Currently, the annual competitive grant is a \$5000 award offered to qualified graduate students studying in a field related to aquatic plant management. The Board is currently considering ways to forever invest the considerable donations that were made through the Memorial established by the

Continued on page 18



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Continued from page 16

Johnson family to continue to support this substantial educational investment. Thanks to everyone for the generosity and recognition of what Bob did for our Society.

I am honored to be serving as President of the MAPMS and grateful for the opportunity. Like most, I set out to do more than is probably feasible when taking on such roles, but thanks to a very passionate and energetic Board, I believe we can make substantial progress.

MAPMS is currently preparing for the 34th Annual Conference in Lombard, IL, March 2nd to 5th, 2014. We hope to see many of you there.

*Submitted on behalf of the Board of Directors by Tyler Koschnick, President, tylerk@sepro.com*



## Northeast APMS

The Northeast APMS Chapter held its annual meeting at the splendid Water's Edge Resort in Westbrook, Connecticut in January 2013. Our meeting attracted 160 members, a new NEAPMS record, and provided yet another informative and stimulating program. The NEAPMS Board of Directors met in September to plan for the society's return to Westbrook in 2014. In the meantime, the NEAPMS Board is keeping members informed of pressing issues that can't wait until January such as the latest news regarding the spread of monecious hydrilla in the Northeast and new state regulations. The society continues to actively seek sound proposals for student scholarships and stipends related to work in the field of aquatic plant management focused on challenges pertaining to the Northeast. If you are a student focused on challenges pertaining to Northeast aquatic plant management, please visit the NEAPMS website for more information: [www.neapms.net](http://www.neapms.net)

*Submitted by Paul H. Lord, NEAPMS President, paul.lord@oneonta.edu*



## South Carolina APMS

The South Carolina APMS Chapter's 36th annual conference was held at Springmaid Beach Resort in Myrtle Beach, South Carolina, October 23-25, 2013. We were delighted to have Carlton Layne with the Aquatic Ecosystem Restoration Foundation as our keynote speaker, which proved to be both educational and entertaining. This year's program also included speakers from the profession who shared their experiences, research, and knowledge. We also offered two special sessions. North Carolina State University hosted an information technology session that focused on new and upcoming technological tools that prove to be useful to the profession. West Bishop, an Algae and Aquatic Research Scientist with SePRO Corporation, taught an Algae ID session that was interactive, allowing attendees to assess several algae blooms. Those who were able to attend left with a new found knowledge in different algae species and how to approach their treatment. SCAPMS was proud to offer education credits to four states including: South Carolina, North Carolina, Georgia and Alabama. This allowed the society to attract those who carry applicator licenses in multiple states.

During the 2013 conference, The Phillip M. Fields Scholarship was awarded to Mr. Jamie Morgan, University of Georgia. SCAPMS also awarded prize earnings to four student papers. The Howard B. Roach Student Paper Award recipients were: 1st place, Mr. Brett Hartis, North Carolina State University; 2nd place, Ms. Brigitte Haram, University of Georgia; 3rd Place, Mr. Justin Nawrocki, North Carolina State University; and 4th place, Mr. Jamie Morgan, University of Georgia.

The board of SCAPMS welcomed two new board directors, Mr. Clay Chappell, Southland Fisheries and Mr. Allen Smith,

Estate Management Services. While we welcome two new members we also extend our gratitude to Mr. Skip Karby, Mountain Lake & Pond Management and Mr. John Crabb, Estate Management Services who have fulfilled their term on the board.

SCAPMS is looking forward to another great year in 2014! We encourage everyone to visit our website, [www.scapms.org](http://www.scapms.org) for updates and information, or visit our Facebook page. You may also contact the board at [board@scapms.org](mailto:board@scapms.org)

*Submitted by Casey Moorner, SCAPMS President, casey.moorner@santeecooper.com*

## Western APMS

The WAPMS held its 32<sup>nd</sup> annual meeting in beautiful Coeur d'Alene, ID at the Coeur d'Alene Resort from March 25-27, 2013. Our Keynote address was delivered by Mr. Tom Myrum, Executive Director, Washington State Water Resources Association, discussing the issues of double permitting of aquatic pesticides. A special session was held discussing the control tactics and measures employed for flowering rush control. Flowering rush is a species of concern in the Western U.S. and seems to be spreading to new water bodies yearly. Additionally, several presentations were given on Eurasian watermilfoil control, another key invasive species in the Western U.S.

Board Update: Toni Pennington (Past-President), Andrea Austel-Sealock (Secretary), Mike Stephenson (Director) and Pat Akers (Director) fulfilled their duties and we are grateful for their dedication and loyalty to the society. At the 2013 business meeting, Pat Akers (Vice-President), Toni Pennington (Secretary), Joe Vassios (Director) and John Selby (Director) were nominated and elected to their respective positions on the board.

The 33<sup>rd</sup> Annual WAPMS Meeting will be held in Reno, NV from March 30 to April 2, 2014 at the Peppermill. Be looking for the call for papers from Pat Akers, Program Chair, coming this fall.

*Submitted by Cody Gray, WAPMS President, cody.gray@uniphos.com*



# 37<sup>th</sup> Annual Training Conference

By Karen Brown  
Photos by Keith Mangus

The FAPMS 37<sup>th</sup> Annual Training Conference was attended by a whopping 318 people and, by all accounts, was a huge success. We had a little more attendee participation this year with an applicator paper presented by **Luke Dunning** and **Cliff Mullins** from the City of Winter Park Lakes Division. Luke and Cliff received a plaque and shared a cash award of \$300. The title of their presentation was "Implementing a Comprehensive Lake Management Program: An Operator's Point of View." Congratulations, Luke and Cliff, for boldly going where few applicators dare to go – on stage! We also had three nominations for the **Aquatic Plant Manager of the Year** award, won by **Tracy Wood** of Applied Aquatic Management, Inc. Congratulations, Tracy! (see page 15)

Two very prestigious awards were presented this year. Both **Ken Langeland** (University of Florida/IFAS Center for Aquatic and Invasive Plants) and **Don Doggett** (Lee County Hyacinth Control

District) were presented with **Honorary Lifetime Memberships** for their many years of service to FAPMS and the science of aquatic plant management. Ken Langeland served as President in 1992; Don Doggett served as President in 1996. Don has retired but attended the meeting to emcee the annual duck races and see old friends and colleagues. Don's plaque reads, *"The Florida Aquatic Plant Management Society hereby recognizes Don Doggett as an Honorary Lifetime Member for his extraordinary service and outstanding contributions to our Society and our Profession. Your generous and dedicated support will forever be your legacy to the Florida Aquatic Plant Management Society."*

Ken Langeland will retire June 31st, 2014. His plaque reads, *"The Florida Aquatic Plant Management Society hereby recognizes Kenneth A. Langeland, Ph.D. as an Honorary Lifetime Member for his many contributions to Aquatic Plant Managers, to the science of Aquatic Plant Management, and to the State*

*of Florida. Thank you for your many years of valuable service and dedication to our industry and our profession."* Congratulations, Don and Ken!

The photo contest was dominated by **Mackenzie Lewis** from Applied Aquatic Management, Inc. She took 1st place in the Operations category and 2<sup>nd</sup> and 3<sup>rd</sup> place in the Scenic category. **Wade Harper** took first place in the Scenic category and **Joyce Hertel** (Fellsmere Water Control District) took 3<sup>rd</sup> place in Operations. The winner of second place in Operations was not recorded; if you know who won, please ask him to send his name and an electronic copy of the winning photo to the editor for mention in our next issue. See pages 16-17 to view the winning photos submitted to the Editor.

As always, the Duck Race event was well attended and raised money for the FAPMS Foundation. In the yellow duck race, **Monte Goodman** won a Nikon camera and **Tom McNabb** won an iPad. In the brown duck



Best applicator paper winners **Luke Dunning** and **Cliff Mullins** from the City of Winter Park Lakes.



Honorary Lifetime Memberships award winners, (top) **Ken Langeland** of University of Florida/IFAS Center for Aquatic and Invasive Plants and (lower) **Don Doggett** of Lee County Hyacinth Control District.



Photo Contest Award Winners (top) **Mackenzie Lewis**, Applied Aquatic Management, Inc. (lower) **Joyce Hertel**, Fellsmere Water Control District.



race, **Keith Mangus** won a Remington rifle donated by **Texas Aquatic Harvesting**, and **Gabe Foster** won a Gander Mountain gift card. A Bass Pro Shop gift card also was a prize. The banquet continued the fun as more prizes were won by lucky ticket holders. **Shane Foster** won the Samsung Smart TV grand prize sponsored by **Applied Aquatic Management, United Phosphorus Inc, Winfield Solutions, and Syngenta**.

The final grand prize was awarded the next day at the close of the conference with

**Jim Creber** winning a Remington rifle donated by **Applied Aquatic Management, United Phosphorus Inc, Winfield Solutions, and Syngenta**.

At the general business meeting on the final day of the conference, the presidential award was presented to **Tim Harris** (looking much more comfortable than on banquet night) by **James Boggs**, the new FAPMS President. Congratulations, James! Thank you, Tim!



James Boggs and Tim Harris



Tom McNabb



Keith Mangus and Gabe Foster (center)



Shane Foster (center)



Monte Goodman



Jim Creber (center)



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1. Bill Torres, our local arrangements guru for many years.
2. Jerry Merritt wins an expandable saw.
3. Scott Gates looks happy as he picks up his CEU form at the end of the day.
4. Jennifer Myers, FAPMS Treasurer, keeps things running smoothly behind the registration desk.
5. Don Doggett came out of retirement to run the duck races once again.
6. Keshav Setaram, a long-time member, board member, Auditing Committee Chair, and President of the FAPMS Scholarship Foundation.







## Aquavine

### Recent Graduates

**Leif Willey** received his Master of Science Degree from the University of Florida with the thesis, *Biology and control of the invasive aquatic plant crested floating heart* (*Nymphoides cristata*). He is now employed as a Research Biologist with Aquatic Systems, Inc., in Pompano Beach, Florida. Contact him at [Leif.Willey@aquaticsystems.com](mailto:Leif.Willey@aquaticsystems.com)



Leif Willey (right) with graduate advisor Dr. Michael Netherland at the Center for Aquatic & Invasive Plants.

**Kathryn (Kate) Wilson** received her Master of Science Degree from the University of Florida with the thesis, *Florida Freshwater Boater and Anglers' Awareness and Perceptions of Aquatic Invasive Species and Adoption of Preventive Behaviors*. Kate is now employed with the Alberta Ministry of the Environment & Sustainable Resource Development in Edmonton, Alberta, CANADA. Contact her at [kathryn.wilson@gov.ab.ca](mailto:kathryn.wilson@gov.ab.ca)

### FAPMS Scholarship Foundation

The FAPMS Scholarship and Research Foundation, Inc. was established by the Board of Directors of the Society and

is supported by fundraisers such as the annual duck races, a portion of FAPMS memberships, and other sponsors. Since the Foundation's inception in 1986, it has awarded over \$70,000 in applicator dependent scholarships and almost \$18,000 in graduate student awards. **Dr. Joe Joyce**, a charter member of FAPMS who served as President in 1981, has served as Secretary/Treasurer of the Foundation since its inception in 1986. He says, "It has been an honor serving these past 28 years. The Foundation continues to accomplish its purpose and I have enjoyed being a part of it. I have taken great pleasure in participating because it not only has helped with the education expenses of many individuals but it has honored two great members of FAPMS, Bill Maier and Paul Myers." Joe currently serves as Senior Associate Vice President for the Institute of Food and Agricultural Sciences (IFAS) at the University of Florida. He served as Director of the UF/IFAS Center for Aquatic & Invasive Plants from 1983 to 1988.



Joe Joyce

The following FAPMS member dependents were awarded the **Paul C. Myers Applicator Dependent Scholarships** for 2013: **Alexis Pontius**, a junior at Hodges University and the daughter of **Vicki Pontius**; **Luke Allen**, a freshman at the University of North Florida and the son of **Nancy Allen**; and **Kaitlyn Burroughs**, a

## Too Many Weeds Spoil the Fishing

Exotic invasive aquatic plants such as Hydrilla, Eurasian Watermilfoil and Curlyleaf Pondweed, can be detrimental to a healthy fishery in lakes across the country.

These invasive plants when left unmanaged can alter the ecosystem of lakes and reservoirs, cause a decline in the fishery, and interfere with other valued uses of waterbodies.

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For selective control of Hydrilla, Curlyleaf Pondweed, Coontail and other invasive and nuisance aquatic plants.  
No restrictions on swimming, fishing or irrigation.\*

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A broad-spectrum non-selective aquatic herbicide.  
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A broad-spectrum herbicide and algaecide. Hydrothol® 191 provides a companion product or an alternative to copper algaecides when controlling difficult algae species.  
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freshman at Lake Sumter State College and the daughter of **Sherry Burroughs**.

Learn more about this scholarship opportunity at [www.fapms.org/myers\\_scholar.html](http://www.fapms.org/myers_scholar.html). The 2014 Scholarship Applications will be due June 1<sup>st</sup>, 2014.

The **William L. Maier Jr. Memorial Scholarship** will be awarded in 2014 to a junior, senior, post-bachelor or graduate student who is (1) enrolled in an accredited university or college located in Florida, (2) a U.S. citizen, and (3) majoring in a field of study directly related to the management of freshwater, aquatic vegetation for the ecological benefit of aquatic or freshwater environments. Learn more about this scholarship opportunity at [www.fapms.org/maier\\_scholar.html](http://www.fapms.org/maier_scholar.html)

## Syngenta raises stakes with national scholarship

- Scholarship available to students in all crop markets
- Scholarship open to undergraduate students
- Expands Syngenta investment in future of agriculture to national level

Syngenta is proud to announce the new national **Syngenta Agricultural Scholarship** which will launch in January 2014. Scholarship winnings will be used to help finance the education of undergraduate students enrolled as of spring 2014 in an accredited agriculture program at a land-grant university. Corey Huck, head of U.S. sales, Syngenta says, "When we invest in the next generation of ag leaders, we are investing in the future of the industry."

Visit the **scholarship website** ([www.syngenta-us.com/scholarships/](http://www.syngenta-us.com/scholarships/)) for more details as they are announced, in-

cluding prize amounts, essay topic and application guidelines.

## From the Editor

For the past year, I have been the editor of *Aquatics* magazine and have enjoyed the task immensely. I was Associate Editor for two years while Tina Bond got the magazine back on schedule and I will pass the editorship on to Dr. Lyn Gettys with the next issue, remaining on hand as the Associate Editor once again. Having worked at the UF/IFAS Center for Aquatic & Invasive Plants for more than 20 years, aquatics are one of my favorite subjects and I have enjoyed putting the magazine together from scratch for the last four issues. I have also served on the board of directors for the past three years and I have learned that FAPMS is more than a professional society—it is a family to which I feel I belong. Thanks for the opportunity to serve on the board and as editor of *Aquatics*. I look forward to my future involvement with the Society.

— Karen Brown

## FAPMS on Facebook

Go to the FAPMS website ([www.fapms.org](http://www.fapms.org)) and Like us on Facebook. If you do not have an account, you can still view photos from the most recent Training Conference. See your friends and maybe even yourself – it's fun!



## FAPMS Annual Training Conference Abstracts Online

If you missed the annual conference and would like to view the abstracts, you can find them online on the FAPMS website ([www.fapms.org/](http://www.fapms.org/)) under the Conference tab. Thanks again to Dr. Lyn Gettys for making this handy Book of Abstracts available to all participants, in addition to the program.



## Calendar of Events 2014

### January 21-23, 2014

Northeast APMS 15<sup>th</sup> Annual Conference  
Westbrook, CT  
[www.neapms.net](http://www.neapms.net)

### February 3-6, 2014

Weed Science Society of America and Canadian Weed Science Society Joint 2014 Meeting  
Vancouver, British Columbia, Canada  
[wssa.net/meeting/annual-meeting/](http://wssa.net/meeting/annual-meeting/)

### March 2-5, 2014

Midwest APMS 34<sup>th</sup> Annual Conference  
Lombard, IL  
[www.mapms.org](http://www.mapms.org)

### March 3-4, 2014

Florida Weed Science Society 2014 Annual Meeting  
Haines City, FL  
[www.floridaweedsciencesociety.com/](http://www.floridaweedsciencesociety.com/)

### March 30-April 2, 2014

WAPMS 33rd Annual Meeting  
Reno, NV  
[www.wapms.org](http://www.wapms.org)

### April 23-25, 2014

Florida Vegetation Management Association (FVMA) 2014 Annual Conference & Trade Show  
Daytona Beach, FL  
[www.myfvma.org/conference](http://www.myfvma.org/conference)

### May 5-8, 2014

UF/IFAS Aquatic Weed Control Short Course  
Coral Springs, FL  
[www.conference.ifas.ufl.edu/aw/](http://www.conference.ifas.ufl.edu/aw/)

### May 18-23, 2014

Joint Aquatic Sciences Meeting  
Portland, OR  
[aslo.org/meetings/portland2014/](http://aslo.org/meetings/portland2014/)

### Jul 13-16, 2014

APMS Annual Conference – Joint Meeting with MidSouth APMS  
Savannah, GA  
[www.apms.org](http://www.apms.org)



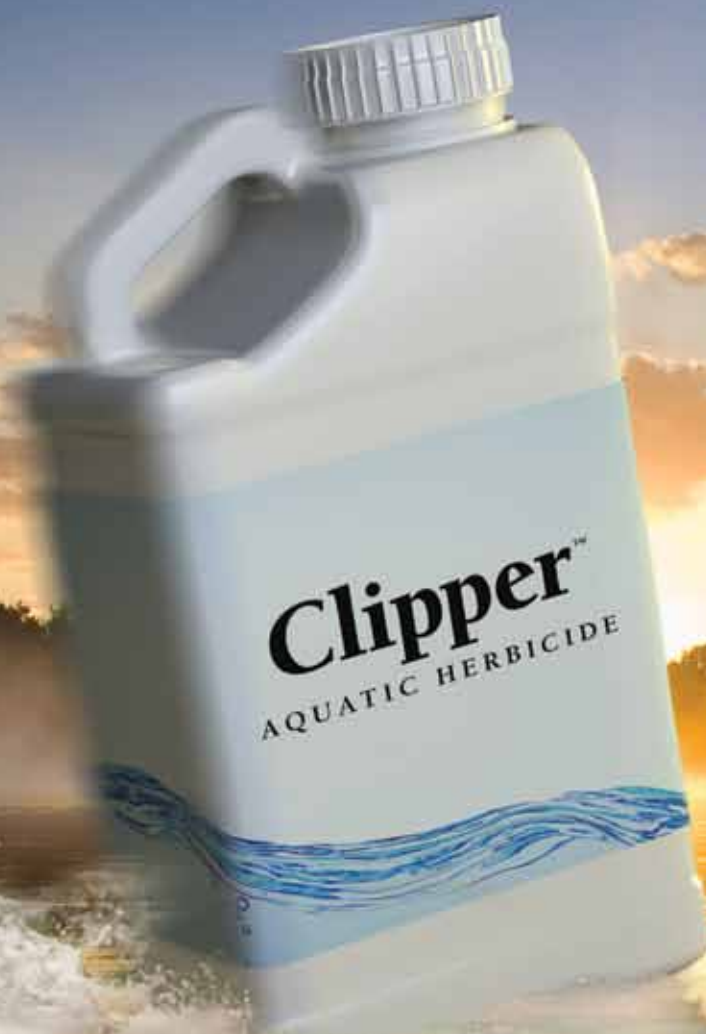


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AQUATIC HERBICIDE  
**Tough. Fast. Gone.**





**Biologist Jesse Stephens with a submersed quadrat across the river from the tuber take-out point on the Rainbow River. See related article on page 9. Photo by Chuck Cichra.**