Mid-South Aquatic Plant Management Society

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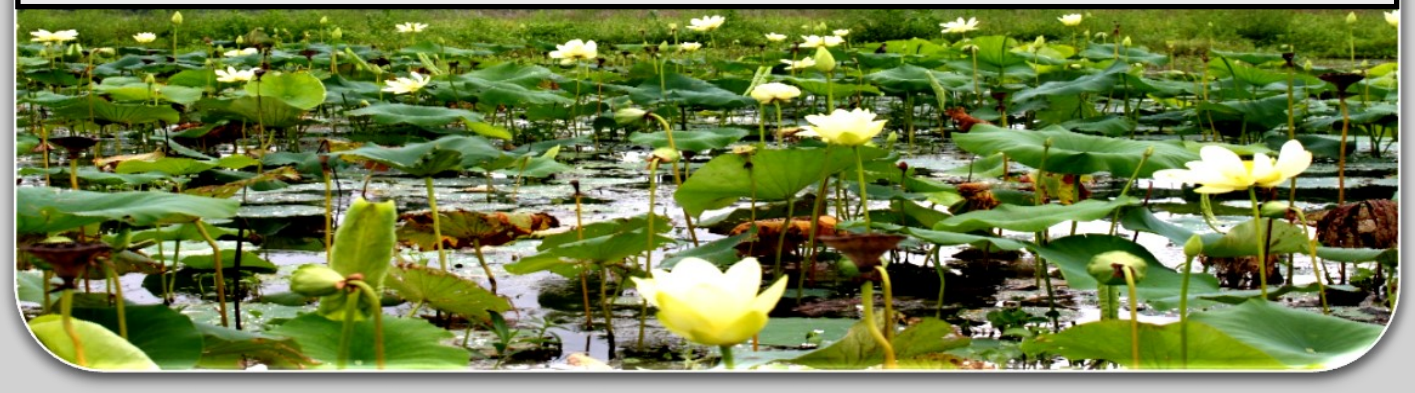

37th Mid-South Aquatic Plant Management Conference

Room reservation for the new conference date is now available! Please book your rooms accordingly, a link to book a room(s) can be found at our website: *www.msapms.org*

Call for Papers:

- September 1, 2018

Early Registration Deadline:

- October 12, 2018

Room Reservations:

- Early Hotel Reservation Deadline: October 14, 2018

Hotel Information:

Embassy Suites by Hilton, Chattanooga
Hamilton Place
2321 Lifestyle Way,
Chattanooga, TN 37421

Student Scholarships

2018 Mid-South Aquatic Plant Management Society Scholarship

The MSAPMS is seeking applications for the 2018 graduate student scholarship to be awarded at the 2018 annual meeting. We request that the successful applicant attend the meeting and give a presentation of research progress and results as they are available. One scholarship of $2,000 will be awarded to a qualified student applicant enrolled and studying aquatic plant science of other relevant research.

The scholarship committee should receive the following information by August 1, 2018:

1. A cover letter which includes the applicant's previous, current, and future relationship to the aquatic plant management industry, and a comment on the importance of the proposed research to aquatic plant management.

2. Copies of unofficial or official transcripts of undergraduate and any graduate work completed to date (these transcripts may be those issued directly to the student by the institution).

3. A letter from the student's major professor recommending the student for the scholarship, indicating that the student is currently enrolled and in good standing, and has had their research proposal approved by their graduate advisory committee.

4. A copy of approved graduate research proposal;

5. One letter of recommendation, other than the major professor.

All Submissions may be made with either hardcopy, addressed as below or electronically via e-mail.

To enter an application or request more information, contact:

Dr. Brett M. Hartis, Ph.D.
3941 Brashers Chapel Rd.
Guntersville AL. 35975
bmhartis@tva.gov

"Weeds of Down Under: A glimpse at New Zealand's Aquatic Pest Plant Management"

Andrew Howell
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North Carolina State University
awhowell@ncsu.edu

Snorkeling for submersed plants at Lake Wakatipu to provide material for a plant display during the 15th International Symposium of Aquatic Plants in Queenstown. Here I'm searching for one of the several native pondweeds, *Potamogeton cheesemanii* which is growing within a bed dominated by *Isoetes alpinus*..

Often when people imagine New Zealand, they recall scenes from Peter Jackson's *The Lord of the Rings* film set. Others may envision the stunning views which feature lush green bush, volcanic landscapes, or the glacially formed crystal-blue waterbodies. However, water resource managers likely have a different perspective, because amongst the spectacular settings and dynamic scenery reside a host of invasive species issues, several of which directly affect aquatic environments.

Although New Zealand is a distant island in the South Pacific, it has not remained exempt from the invasion of exotic species, particularly aquatic pest plants. Unfortunately, New Zealand has been gifted a plethora of exotic macrophytes since the early 1900's— many species of which were introduced as nursery stock or established through the aquarium trade. Several endemic submersed plants often found across the US, have now become recognized invasive species in New Zealand. North American plants, elodea (*Elodea canadensis*), and coontail (*Ceratopyllum demersum*) can be found obstructing waterways and drainages in both the North and South islands. Coontail, commonly referred to as 'hornwort' in the southern hemisphere, is a significant weed for water resource managers, as free-moving "rafts" regularly hinder New Zealand's number one utility resource, hydropower. Still, the US and New Zealand share several macrophytes which require management in both countries, such as Brazilian elodea (*Egeria densa*). However, one pest plant in particular which is absent in North America has become one of the most environmentally devastating oxygen weeds in New Zealand, lagarosiphon (*Lagarosiphon major*).

Continued..

Like many invaded reservoirs and waterbodies found amongst the mid-south and southeast regions of the US, the *Hydrocharitaceae* family plagues the similarly featured waterways in New Zealand. While hydrilla (*Hydrilla verticillata*) has existed within four North island lakes in the past, management programs implementing herbicide and grass carp have led to successfully hydrilla eradication in one lake, with solid progress towards eradication (zero hydrilla over the last 2 years) in the remaining three lakes However, lagarosiphon (South African oxygen weed) and Brazilian elodea remain significant weeds with wider national distributions. Both lagarosiphon and Brazilian elodea can be found in recreational or utilitarian waterbodies, as well as flowing water systems containing internationally prized trout fisheries. Often displacing native submersed species, pest plants like lagarosiphon form dense columnar beds which shade out native pondweeds and the revered charophyte meadows. Non-native emergent vegetation, such as common reed (*Phragmites australis*), alligatorweed (*Alternanthera philoxeroides*), and parrotfeather (*Myriophyllum aquaticum*) are also notable pest plants in New Zealand. While exotic floating species, such giant salvinia (*Salvinia molesta*) and water hyacinth (*Eichhornia crassipes*) are documented, these populations are eradicated when found. In general, free-floating and floating-leaved pest plants account for only a small portion of aquatic plant control when compared to the US.

Example of the pest plant lagarosiphon which is found throughout New Zealand's North and is in several South Island lakes. At first glance lagarosiphon mimics monoecious hydrilla, but after quick inspection the recognizable recurved leaves and closely packed apical shoots reveal the true classification.

New Zealand's unique waterbodies include coastal dunes, glacier melts, calderas, landslide-formed and peat lakes, as well as manmade reservoirs. Unlike the typically turbid waters found amongst the southern regions of the US, Secchi depths of 6-10 m are not uncommon in New Zealand, with 12-14 m Secchi's found among the spring feed dune lakes. The trophic status of New Zealand's waterbodies are generally mesotrophic or oligotrophic although in the past few decades, eutrophic waterbodies have been present nearby heavily grazed paddocks or highly productive agricultural land. However, these point-source issues are being addressed through fencing, riparian plantings, and best management incentives.

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While the US aquatic plant industry may seem to have a limited portfolio of registered herbicides, New Zealand regulations currently limit managers to a selection of just two labeled chemistries, endothall and diquat, for aquatic use. While a 'restricted use' category controls the application of other chemistries (imazapyr, metsulfuron methyl, triclopyr triethyl amine, haloxyfop) for national or regionally significant weeds around water (e.g., alligatorweed, *Zizania* latifolia (Manchurian wild rice), or *Lythrum salicaria* (purple loosestrife)). Aquatic plant management often occurs as an integrated approach of chemical, biological, and physical control methods. By and large, management and survey programs often parallel North American tactics, still there are several distinct strategies. One of the more obvious is the use of manned diving surveys to monitor and map incursions. For those further interested in mapping with divers in New Zealand, check out the National Institute of Water and Atmospheric Research (NIWA) LakeSPI Submerged Plant diver scheme (https://lakespi.niwa.co.nz).

New Zealand has been an eye-opening experience. Not only because of the exceptional landscapes and lingering views which would make any outdoorsman jealous, but also the opportunity to step away from the accustomed pest plants and survey techniques commonly found in the States. Since arriving in New Zealand in early January, I've recognized the importance of continually developing management strategies, both domestic and abroad, to meet the challenges of aquatic pest plants. Likewise, New Zealand has been an empowering experience, highlighting the critical importance of biosecurity, native habitat preservation, and the effectiveness of early detection, rapid response. Much like the US, it is public outreach systems, such as "Check, Clean, Dry", that lend a hand in the success of reducing the spread of invasive weeds among the pure waterways.

Continued...

Examples of New Zealand's unique waterways. *Left:* a wind-formed dune lake, *Right:* glacially cut lake.

Interesting New Zealand Facts

- When you land for the first time in Auckland International airport, you instantly realize that New Zealand's unique biodiversity has ministry officials and non-governmental organizations taking biosecurity risk seriously. Prompt and efficient luggage checks for those traveling with outdoor and recreational equipment occurs consistently, as the concern for introducing pest plants and unpleasant diatoms like didymo (*Didymosphenia geminate*) is high.

- Unlike many areas in the US, the temperate zones of New Zealand do not witness annual senescence of submersed vegetation. Therefore, management efforts occur throughout the year.

- As far as diversity of the waterbodies is concerned, New Zealand definitely has greater species richness amongst the aquatic plant assemblages than most people in the mid-south and southeast are accustomed to viewing. Some communities of native SAV can be found co-occurring at 15+ species!

- Perhaps the most "precious" resource in New Zealand is not the ring forged at Mt. Doom (Mt. Ngauruhoe), but rather the preservation of native waterways and the essential element of life— water.

Left: An example of a New Zealand spring fed river.
Right: A couple of Australian black swans fragmenting lagarosiphon

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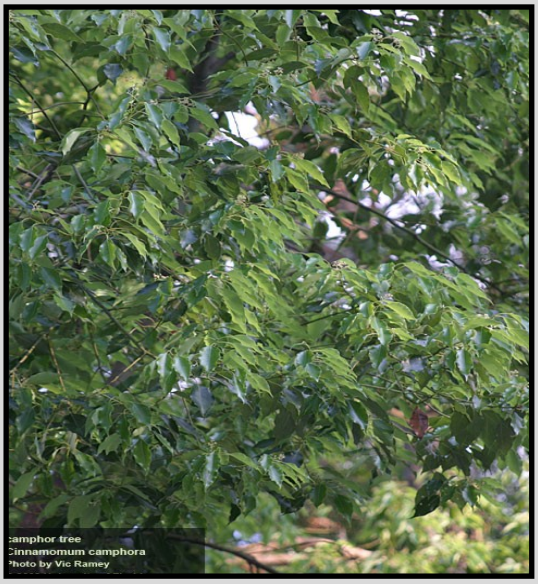
INVASIVE SPECIES UPDATES AROUND THE MID-SOUTH

Mississippi Department of Marine Resources

Michael Pursley
Invasive Species Program Manager
Office of Coastal Resource Mgmt.

The majority of the invasive species work at the Mississippi Dept. of Marine Resources is on the 35,000+ acres of Coastal Preserve properties that we manage. Currently, Chinese tallow and cogon grass are the leading problematic species; however, camphor trees seem to be popping up with increasing frequency. Our recent aquatic invasive species management activities include contracting helicopter crews to treat rapidly-expanding patches of phragmities on a newly restored sand area on Deer Island. In addition, a phragmities infestation was recently removed with good success on Beach Vitex. Our most serious problem currently involves trying to contain and control a giant apple snail infestation that was discovered during a routine early detection and rapid response survey in 2014.



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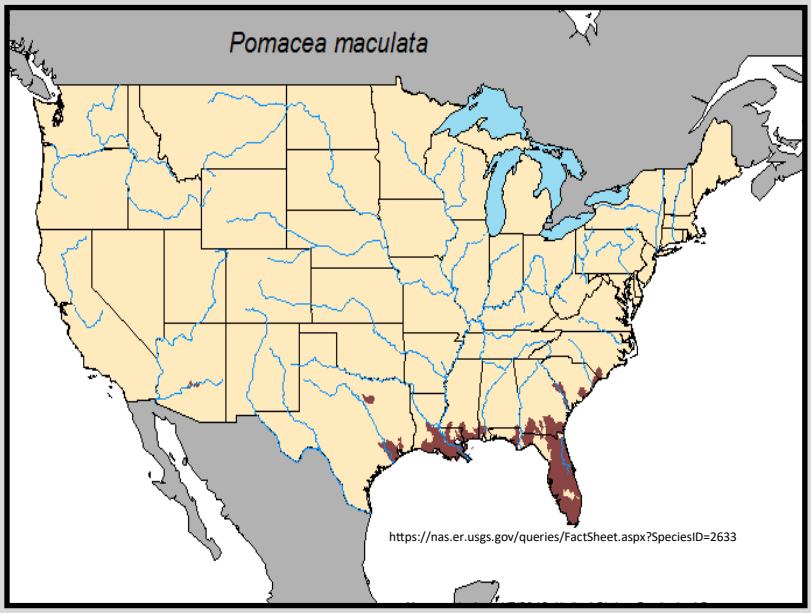
Control options are unfortunately limited and the long term outlook is not in our favor. We have been trying to destroy egg masses before they hatch and are trying to utilize every possible method to capture the snails. We have noticed some predation by wading birds and the cold weather during February seems to have caused some mortality, but we are still finding egg masses and live snails.

Hot-pink eggs are signs that giant apple snails have infested a waterway. Photo Courtesy Gavin Chauvin
http://www.louisianasportsman.com/details.php?id=7040



Georgia Power Company
Hydrilla Management Update 2018

Warren Wagner
Georgia Power Company
Sr. Land Management Specialist
Bartletts Ferry Lakes Resources Office
Fortson GA

The approach of summer signals the onset of monoecious hydrilla growth in the Georgia Power Reservoirs of Lakes Harding, Goat Rock, and Oliver (Columbus, GA area). Hydrilla was discovered in Lake Oliver in 2012 and has spread to the other two reservoirs. Since 2013, GPC has applied aquatic herbicides to approximately 3,000 acres of monoecious hydrilla to keep navigation and access open in these Columbus area lakes.

Over the past several seasons, Georgia Power aquatic plant managers have developed a management strategy to deal with the hydrilla infestation. Starting in the middle of May and into June of this year, vegetation surveys will be performed in areas where hydrilla was observed the previous season as well as lake wide surveys to discover new areas of growth. Once areas of hydrilla are mapped and quantified (e.g. water depth, volume, etc.) a treatment plan is developed that includes use of aquatic herbicides Diquat, Copper, Endothall, Flumioxazin, and selective placement of Fluridone. Aquatic herbicide application areas will be specified by Georgia Power and application of the herbicides will be performed by an aquatic herbicide contracting company. Several rounds of herbicide applications followed by post treatment efficacy evaluations will be performed throughout the summer and into October of this year. *Continued..*

New tubers produced October 2017

On a biological level, the focus of the hydrilla management program is to reduce the number of tubers deposited by hydrilla during the growing season in management zones. This can be accomplished by targeting or focusing the timing of herbicide applications after most tubers have sprouted and during active or dense growth periods before the onset of new tuber formation by mature plants. Our sampling efforts over the past few years have included tuber sampling (coring) to determine the timing of hydrilla emergence from tubers (deposited the previous season). The sampling efforts have also focused on biomass production during the summer months.

Data suggests that in the middle Chattahoochee reservoirs the apex of sprouting occurs from April through June and then tapers off in July. Peak biomass production is linked to temperature (20-28 C) with the majority of biomass production occurring in July through September and with a significant reduction into late October. Our past sampling efforts have revealed that new tuber formation and deposition into lake sediments occurs late in the growing season (late September to early October) prior to the winter senescence period of hydrilla. This culminates into a highly defined growing season that gives GPC at least one advantage in timing and allocation of available resources to be used during the most critical time of hydrilla growth.

Management of hydrilla is no easy task and a long term sustained management effort must be maintained to make any progress. GPC will continue with tuber studies into 2018 to gain more insight into the affect that the management program is having on the biology of hydrilla in Columbus area lakes Harding, Goat Rock, and Oliver.

Sprouted hydrilla tubers during July 2017

Now Available

Journal of Aquatic Plant Management Research Methods

The Aquatic Plant Management Society hopes this publication will set a standard for conducting high-quality research for the next several decades. As the pioneers of these techniques move into retirement, we hope this collection of articles will help prepare the next generation of aquatic plant managers to lead our discipline with innovation and passion.

-Jason Ferrell, Ph.D. Editor

Copies can be purchased from the Aquatic Plant Management Webpage
www.apms.org

We graciously acknowledge the support of our partners in this project. Without them, this publication would not have been possible.

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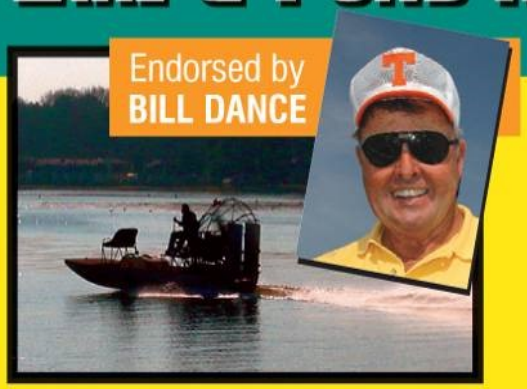

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A Note From The Editor

I know things are starting to pick up around the mid-south as we enter the busy season, however I am always looking for good material to include in the MSAPMS newsletter. If anyone has any news related to aquatic plant management or a unique experience that they would like to share in the newsletter, please contact me at the email below. I would like to personally thank Andrew Howell, Michael Pursley, and Warren Wagner for contributing to this edition of the MSAPMS newsletter. I hope everyone has a safe and productive summer!

Thank you

-B. Sartain

bradsartain@gmail.com

Upcoming Annual Meetings/Events 2018

July 15-18 Aquatic Plant Management Conference; Buffalo, New York

September 5-6 Aquatic Weed School; University of California, UC Davis

October 3-5 South Carolina APMS Conference; Myrtle Beach, SC

October 15-18 Florida APMS Conference; Daytona Beach, FL

November 5-7 Mid-South APMS Conference; Chattanooga, TN


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