

## *In this Issue*

- *President's Update* pg. 1
- *TAPMS 2020 Conference* pg. 2
- *Facebook Highlights* pg. 6
- *Focus on Members* pg. 10
- *Washington Highlights* pg. 15
- *Service Providers list* pg. 21



*A Texas Aquatic Plant Management Society Publication*

## Texas Aquatic Plant Management Society Newsletter

# *On the Water*

## *President's Update*

TAPMS members, 2020 has been a challenging year for everyone, in all aspects of our society. However, as a society, we have remained determined to maintain a sense of normalcy through these difficult times. Although we are unable to come together this year in our normal conference setting, we hope all our members join us for the online TAPMS virtual meeting, November 17<sup>th</sup>, 12pm-5pm. This virtual meeting will allow TAPMS members the opportunity to receive their 2021 TAPMS membership and CEUs credits. During this meeting, there will be five CEU presentations with short breaks or meeting sponsor presentations in between. We will also vote on 2021 TAPMS Board members during this virtual meeting. A poll will be sent out during the meeting for members to vote and results will be announced at the end of the meeting. Please send TAPMS board member nominations to Kristy Kollaus ([kkollaus@edwardsaquifer.org](mailto:kkollaus@edwardsaquifer.org)).

Thank you TAPMS members for your continued support during this trying time and we hope to see many of your faces on our first TAPMS virtual CEU meeting! Please see the course agenda below as well as presenters and presentation summaries. We will continue to update the agenda to include sponsor presentations.

*Kristy Kollaus*



## 2020 Texas Aquatic Plant Management Society Virtual Meeting

TAPMS will have their first virtual meeting on **November 17, 2020 from 12pm-5pm.**

The cost for the 2020 TAPMS virtual CEU course is \$80 which includes your TAPMS 2021 membership fees. Once you register, we will send you a link to the virtual meeting and further details once we get closer to the meeting.

[Register Here](#)

Sponsorship levels for the TAPMS virtual meeting are also available starting at \$200 up to \$1,000. These sponsorships will greatly contribute to student scholarships in 2021. Virtual meeting sponsors will be announced during the meeting and listed during meeting breaks and on the TAPMS website and newsletters. The Silver Level Sponsor (\$500) and Gold Level Sponsor (\$1,000) can have a short presentation during the virtual meeting. Each level of sponsorship will receive TAPMS memberships and virtual meeting registrations included. (Please email Kristy Kollaus with any further questions regarding the virtual meeting sponsorships.)

**Important Information:** During the virtual meeting, we will also hold polls with simple questions at the end of each CEU presentation. This is a requirement of the TDA to ensure participants are watching the entire presentation. You will need to answer these questions in order to receive the CEU credits. We will have individuals to help with technical issues during the meeting.

Thank you TAPMS members for your continued support during this trying time and we hope to see many of your faces on our first TAPMS virtual CEU meeting! Please see the course agenda below as well as presenters and presentation summaries. We will continue to update the agenda to include sponsor presentations.



## TAPMS Virtual CEU Course Agenda 2020

**Tuesday, November 17, 2020**

12:00 pm– Presidents introduction and TAPMS board member nominations

12:05 pm– John Findeisen and Monica McGarrity- Statewide Integrated Pest Management of Aquatic and Riparian Invasive Species (*1 IPM CEU*)

1:00 pm– 5 Min break/Sponsor Spot, Poll questions on Presentation 1

1:05 pm– Chris Smith- Drift Minimization: Maximizing your chemical investment (*1 Drift CEU*)

2:00 pm– 5 min Break/Sponsor Spot, Poll questions on Presentation 2

2:05 pm– David Buzan- Golden Algae – Toxic Fish Killer in Texas (*1 General CEU*)

3:00 pm– Break/Sponsor Spot, Poll questions on Presentation 3 and Poll for TAPMS board member selection

3:05 pm– Monica McGarrity- Integrated Pest Management of Nuisance Aquatic Vegetation in Texas (*1 IPM CEU*)









4:00 pm– Break /Sponsor Spot, Poll questions on Presentation 4 and Poll for TAPMS board member selection.

4:05 pm– Casey Williams- An Overview of Important Aquatic Plant Families in Texas and Comparisons in Field Identification (*1 General CEU*)

5:00 pm– Poll questions on Presentation 5. Closing statements and voting results for TAPMS board member

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## TAPMS Presentation Summaries

### **John Findeisen and Monica McGarrity** - *Statewide Integrated Pest Management of Aquatic and Riparian Invasive Species*

This presentation will provide an update on Texas Parks and Wildlife Department's aquatic vegetation and invasive species management efforts in Fiscal Year 2020 (Sept. 2019 – Aug. 2020), with a focus on implementation of an Integrated Pest Management (IPM) strategy. Texas' IPM strategy employs a combination of prevention, herbicide treatments, biological control efforts, and outreach for not only prevention but also to promote environmental stewardship (e.g., enhancing creek health) and involvement in citizen science monitoring efforts. Early Detection and Rapid Response (EDRR) capacity is vital to efforts to monitor for new infestations of the most problematic species such as giant salvinia (*Salvinia molesta*) and zebra mussels (*Dreissena polymorpha*) and mount a rapid response when feasible. Management efforts continue to focus on floating, aquatic invasive plants and riparian invasive plants that crowd or shade out native plants, degrade habitat for fish and wildlife, and inhibit boater access. Management of aquatic and riparian invasive species using an IPM approach plays a key role in conserving Species of Greatest Conservation Need (SGCN) and providing hunting, fishing and outdoor recreation opportunities for the use and enjoyment of present and future generations.

### **Chris Smith**- *Drift Minimization: Maximizing your chemical investment... When bad things happen to good droplets*

There is a need to make sure spray applications reach their target. Maximum coverage is needed for optimal pesticide performance. Maximum coverage is needed to reduce the movement of pesticides to non-target areas. There are many factors that affect whether a spray application reaches its target. Actions can be taken to reduce spray movement and ensure spray applications reach their target. Topics covered in this presentation include: What is spray drift? Why is reducing drift important? What factors affect drift? What can be done to limit spray drift?

### **David Buzan**- *Golden Algae – Toxic Fish Killer in Texas*

Golden algae, *Prymnesium parvum*, was first identified as a causative agent for a major fish kill in the Pecos River in Texas in 1985. Historical fish kill records indicate a large fish die-off in the Pecos River on the Texas-New Mexico border and in Red Bluff Reservoir was also caused by golden algae. Since that time, golden algae has spread to the Colorado and Brazos river basins, killing tens of millions of fish in major reservoirs like Possum Kingdom, Granbury and Whitney. It is now recognized as a fish killer in a number of states in the continental U. S. Originally recognized as a brackish algae, it gained fame in the 1960's and 70's killing fish in brackish water aquaculture ponds in Israel. Although it has been found in other environments (coastal waters of Texas and some east Texas reservoirs) it seems to cause fish kills in higher conductivity/higher pH water bodies.

David Buzan has investigated golden-algae caused fish kills across the state since 1985. He currently analyzes water samples from private ponds experiencing fish kills to determine if golden algae caused the fish kills. He sees golden algae fish kills occurring in ponds fed with brackish groundwater in south Texas. These kills typically occur from the spring into the summer. Some of his clients have also seen golden algae fish kills in ponds fed with brackish water from the upper Brazos River.



Texas Agrilife describes a number of treatment options for the control of golden algae in private ponds and lakes. Researchers at Texas Tech are investigating the use of extracts from giant cane as possible chemical controls. In this session, David will review the history of golden algae kills, golden algae biology, and observations on different control options like water quality management, liquid shades and chemical controls.”

**Monica McGarrity- *Integrated Pest Management of Nuisance Aquatic Vegetation in Texas***

Control of nuisance aquatic vegetation in Texas waters often requires an integrated pest management approach with the best control method being identified and used for the individual situation. Nuisance aquatic vegetation management in Texas—regardless of method—must be done in accordance with the State Aquatic Vegetation Plan following key treatment approval and/or permitting processes for most activities. This presentation will discuss integrated pest management strategies and provide detailed guidance on understanding and navigating these requirements for implementing chemical, mechanical, biological, or cultural control methods in compliance with the state plan to successfully manage aquatic plants.

**Casey Williams- *An overview of important aquatic plant families in Texas and comparisons in field identification***

The term “aquatic plant” is broad and covers a wide range of vascular plant families some of which share very similar characteristics between their aquatic representatives. In this presentation I will cover the fundamental points on what constitutes an “aquatic plant”. Knowledge of lifecycle strategies, morphological characteristics and growth habits are all important for understanding what an aquatic plant is. I will also highlight and discuss some of the more important aquatic plant families in Texas (examples include the milfoil family, frogbit family, waterlily family and primrose family and more) and representative species from each family to help reinforce field identification between families, especially species that look similar but belong to different families, as well as comparison of species within families.



**LIKE TAPMS on Facebook! Below are some interesting posts from our FB page**



Reminder! This is Alligator hatchling season. Be careful when working around tall littoral vegetation where the hatchlings and juveniles may be hiding. Mom will not be far away. What are YOUR experiences with dangerous aquatic critters?

Photo by Isaac Lord, Brazos Bend State Park, 9/12/20



This is brittle waternymph, *Najas minor*. Until today, I have never seen it in real life, I have seen pictures of this plant for years and immediately knew exactly what it was as I walked out onto the dock today.

Brittle waternymph is not native to the US and is fairly rare in Texas. This was in a private lake I manage that doesn't have any boat traffic, so the most likely introduction would have been from waterfowl.

[Fisheries Biologist Steven Bardin](#)





Anyone familiar with this plant? Humped bladderwort (*Utricularia gibba*) is a carnivorous aquatic plant. Although there are several species of bladderwort in Texas this particular species is the most widespread, ranging from East Texas to the Panhandle. It is also common globally and found on every continent except Antarctica. Humped bladderwort can be problematic when occurring in abundance. It can usually be found tangled with other aquatic plants or growing as a mat floating along the edge of a pond or lake. It can grow rooted or un-rooted but commonly attaches to another plant for support. Although it looks similar to muskgrass or naiad, among others, it can be easily distinguished by the black structures which are the carnivorous traps filled with digesting aquatic invertebrates.

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Brittany Chesser, Aquatic Vegetation Management Program Specialist with Texas A&M AgriLife Extension Service, and Dr. Todd Sink recently published a paper on duckweed and water meal—free-floating aquatic plants that can be problematic if left unmanaged.

This publication explains how to prevent and control it physically, biologically, and chemically. Download this free resource today, at: <https://aquaplant.tamu.edu/aquatic-vegetation-fact-sheets/>



# FOCUS ON TAPMS MEMBER

## Haley Kokel

Howdy, I am Haley Kokel. I started my native aquatic plant nursery, Fish On Aquatic Plants at the beginning of 2020. Experiences that led me to where I am today started by being taught to garden and fish when I was very young. Growing up, I always found a way to go to one of the ponds on family property or fish with my neighbors. Around the house, we grew many plants from seed and cuttings. Although I do not remember what plants we had anymore, I dug my own water garden in the front yard when I was eight years old. My first introduction to wildlife and fisheries management was when I began participating in the Wildlife Habitat Education Program through 4-H in fourth grade. I studied Wildlife and Fisheries Science for my Bachelor's Degree at Texas A&M University and discovered I wanted to work in fisheries through my classes and by volunteering. Working with Texas Parks and Wildlife Inland Fisheries as a student technician and for my Master's degree, I helped start a native aquatic plant nursery and established plants in Texas lakes. In 2014, I moved to Kansas and worked for the Missouri Department of Conservation Fisheries Division where I established plants in a new native aquatic plant nursery and wrote a plan for plant establishment in a newly renovated reservoir.

After five years of living in Kansas, my family and I moved back to Texas in August 2019. My main career goal after moving back was getting reinvolved in the Texas Chapter of the American Fisheries Society (TCAFS) and the Texas Aquatic Plant Management Society (TAPMS). Prior to opening the nursery, I had opportunities for part time work, but found it hard to justify childcare cost and drive time with two toddlers. While at the 2019 TAPMS meeting and the 2020 TCAFS meeting, it was recommended that I start a native aquatic plant nursery based on supply and demand throughout the state. I was hesitant to get started at first, but more input from other fisheries professionals convinced me that starting a nursery would be a good way to continue my professional career.

My education, previous work experience and my lifelong hobbies of gardening and fishing made me sure starting a nursery was the right decision. Being able to work from home and set my own schedule has allowed me the flexibility to have plenty of family time as well. Getting the nursery set up was certainly a big undertaking which I had help from my family to get it set up. Both of my children enjoy helping me propagate and plant new plants or just play the water. They like the *Potamogeton nodosus*, longleaf pond weed tank the best, but my favorite has always been *Pontederia cordata*, pickerelweed. I like the vegetation structure as well as the flowers. Like many of the plants, pickerel weed is easy for me to propagate, establish and grow quickly in the nursery.

In 2020, I have begun to gauge the overall demand for aquatic plants as well as sense which plants have the highest demand in my market. I have plans for expansion in early 2021. I will be adding more stock tanks to my nursery, increasing my plant capacity by 50 percent.





Fish On Aquatic Plants is on both Facebook and Instagram. I utilize both to share updates about the nursery as well as information about native aquatic plants and other fisheries events or information. Actively following other social media pages and groups has allowed me educate people that have questions on aquatic vegetation as well as introduce my business when people are looking to purchase aquatic plants.

One of my other goals is to increase my involvement in education and outreach. I am already in contact with a few youth groups and families in my community and look forward to educating them about aquatic plants, fishing and conservation. I also hope to help with programs and camps that I participated in or volunteered with previously.



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## FOCUS ON TAPMS MEMBER Ryan O'Hanion

Ryan O'Hanlon, earned a bachelor's in 2014 and a master's in 2016 from Texas A&M University majoring in wildlife and fisheries sciences. His experience expands from lake ecology studies with Texas A&M University and Texas Parks and Wildlife to aquatic plant propagation and control in the private sector. His seven years of experience, in the multitude of fields, provides a unique and holistic approach to each project for his company Stonefly Aquatic Nursery. Ryan is co-owner and lead aquatic horticulturalist.



American water-willow is probably our favorite plant to grow, primarily because it was the focal point of Ryan's graduate degree. It doesn't hurt that water-willow is easily propagated and can withstand drought, inundation and the presence of grass carp.



Eel grass and golden canna are a close second and third, respectively. Once established, eel grass can be extremely helpful in a fishery and gives fishermen something to target.

Golden canna helps provide the extra 'pizazz' for the lake owner looking to add some color with a tropical feel to their view.



Over the course of the season, his company has more than doubled capacity and continues to plan for growth coming into 2021. As the nursery grows, we expand the availability of both the species and number of plants. Future plans include overall expansion of space to grow higher numbers of stock.

*Stonefly Aquatic Nursery is a grower and supplier of native aquatic plants as aesthetic, conservation, and management tools. Our founders grew up hunting and fishing, which developed a passion for lake and wetland ecosystem conservation. We strive to provide high-quality plants to best suit the needs of the lake or wetland.*

Please check us out on Facebook, Instagram or our official website (<https://www.stoneflyaquaticnursery.com/>).

April and Ryan O'Hanlon working up plants (spikerush and pickerelweed) in cool Fall weather.



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## Washington Report (APMS) Highlights

### 2020 WOTUS Rule Published on April 21, 2020

The EPA and the U.S. Army Corp of Engineers published their final Navigable Waters Protection Rule that defines which waters are “waters of the United States” (WOTUS). The 2020 WOTUS Rule represents the final version of the 2018 draft rule. The 2020 WOTUS Rule will go into effect nationwide on June 22, 2020, but 17 states and various environmental groups have already filed suit seeking to challenge the rule. The 2020 WOTUS Rule seeks to provide certainty by explicitly describing those waters or features that it seeks to cover as well as those that are explicitly excluded. The following waters are explicitly covered by the 2020 WOTUS Rule:

- Territorial seas and traditional navigable waters
- Perennial and intermittent tributaries to those waters
- Lakes, ponds, and impoundments that contribute surface flow to territorial seas and navigable waters
- Wetlands adjacent to jurisdictional waters.

The 2020 WOTUS Rule also explicitly excludes twelve categories of waters and features from the WOTUS definition, including the following:

- Groundwater, including groundwater drained through subsurface drainage systems
- Ephemeral streams and features like swales, gullies, and pools that flow only in direct response to precipitation,
- Ditches, including agricultural ditches, that are not traditional navigable waters and are not constructed in adjacent wetlands and do not relocate a tributary of traditional navigable waters,
- Prior converted cropland, and
- Artificially irrigated areas that would revert to upland if artificial irrigation ceases.

When determining if a water body or feature meets one of the jurisdictional definitions or exclusions, federal agencies will consider the circumstances during a “typical year.” This definition will be important in determining the division between an ephemeral stream, which only flows due to precipitation, and a perennial or intermittent stream, which flows seasonally or annually. The 2020 WOTUS Rule defines a “typical year” to mean “when precipitation and other climatic variables are within the normal periodic range for the geographic area ... based on a rolling thirty-year period.” Lastly, the explicit exclusion of groundwater is a noteworthy feature of the 2020 WOTUS Rule. Just two days after the 2020 WOTUS Rule was released, the U.S. Supreme Court ruled in *County of Maui v. Hawaii Wildlife Fund* that discharges into groundwater may fall under the jurisdiction of the Clean Water Act (CWA) to the extent that they represent the “functional equivalent” of a discharge directly into navigable waters. That is to say, according to the Supreme Court, in at least some cases, groundwater will fall under the jurisdiction of the CWA, whereas the 2020 WOTUS Rule states that groundwater is completely excluded from CWA jurisdiction.



### **Lake Management**

Dr. Wagner has a distinguished career of service in water supply protection and lake management including leadership roles with the North American Lake Management Society (NALMS). His presentation summarized the science behind available management techniques – science that has been in large part driven by federal research funding. However, increasing HAB outbreaks in the United States, and globally, highlight the urgent need for continued federal research support and national-level coordination to address both short-term risks and longterm solutions for HABs. The webinar was part of the National Coalition for Food and Agricultural Research’s (NCFAR) Lunch~N~Learn Capitol Hill Seminar Series that serves as a forum and a unified voice in support of sustaining and increasing public investment at the national level in food and agricultural research, extension and education. WSSA is a sponsor of the seminar series. The webinar was well received and had 200 registrants. Richardson noted that it’s critical we use integrated approaches with a combination of biological controls, cultural practices, herbicides, mechanical tools, nutrient management and prevention efforts to help stop the spread of invasive aquatic weeds. Ten ways to take action and slow the spread of noxious and invasive weeds include 1. Learn about invasive weeds, especially those found in your region. Your county extension office and the National Invasive Species Information Center are both trusted resources. 2. Clean your hiking boots, waders, boats and trailers, off-road vehicles and other gear to stop invasive weeds from hitching a ride to a new location. Learn more at [www.playcleango.org](http://www.playcleango.org). 3. Avoid dumping aquariums or live bait into waterways. Learn more at [www.habitattitude.net](http://www.habitattitude.net). 4. Clean your fishing equipment and don’t dump live bait. Learn more: <http://stopaquaticchitchhikers.org> 5. Don’t move firewood over long distances. Instead, buy it where you’ll burn it, or gather on site when permitted. [www.dontmovefirewood.org](http://www.dontmovefirewood.org) 6. Buy forage, hay, mulch and soil that are certified “weed free.” Learn more at [www.naisma.org/programs/weed-free-standards](http://www.naisma.org/programs/weed-free-standards). 7. Report new or expanding invasive

weed infestations to authorities at [www.invasive.org/report.cfm](http://www.invasive.org/report.cfm). 8. Ask your local, state and national political representatives to support invasive and noxious weed management efforts. 9. Plant only non-invasive plants in your garden and remove any known invaders. 10. Share your NISAW activities with friends and followers via text message and social media. Don't forget to use the hashtags #NISAW and #InvasiveSpecies!

### **USDA Updates Biotech Regulations**

On May 18, USDA-APHIS published a final rule intended to modernize USDA's biotechnology regulations under the Plant Protection Act. The new rule marks the first comprehensive revision of USDA biotech regulations since they were established in 1986 under the "Coordinated Framework for Regulation of Biotechnology." The final rule amends the regulations regarding the movement (importation, interstate movement, and environmental release) of certain genetically engineered (GE) organisms in response to advances in genetic engineering and APHIS's understanding of the plant pest risk posed by GE organisms. APHIS states that the new rule provides "a clear, predictable, and efficient regulatory pathway for innovators, facilitating the development of genetically engineered organisms that are unlikely to pose plant pest risks." The new rule, known as the "SECURE" rule (Sustainable, Ecological, Consistent, Uniform, Responsible, Efficient) differs from the previous regulatory framework by focusing on an organism's properties and not on the method used to produce it. APHIS states that this approach enables it to regulate organisms developed using genetic engineering for plant pest risk with greater precision than the previous approach. This method will reduce regulatory burden for developers of organisms that are unlikely to pose plant pest risks and will continue to provide oversight of organisms developed using genetic engineering that pose a plant pest risk.

The new regulatory process for organisms developed using genetic engineering consists of the following steps: Determine whether the plant meets the criteria for an exemption with the option for requesting confirmation of the plant's exempt status. This step will be implemented starting August 16, 2020. - Regulatory status review (RSR): Request a RSR to determine if a plant developed using genetic engineering poses a plant pest risk. This step will be implemented for certain crops on April 5, 2021, and will be fully implemented on October 1, 2021. - Permitting: Apply for a permit for a regulated

organism that does not undergo or pass the RSR. An RSR request may be submitted for most plants moved under permit. This step will be implemented on April 5, 2021. The final rule is a welcome change for most biotechnology stakeholders. The Biotechnology Industry Organization (BIO) praised the final rule, welcoming the diminished barriers to innovation as sensible and efficient. The Center for Food Safety condemned the final rule, noting that under it, "the overwhelming majority of GE plant trials would not have to be reported to USDA, or have their risks analyzed before being allowed to go to market."

### **National and Regional Weed Science Societies**

APHIS was asked to address in the issue of asynchronous approval of a herbicide-tolerant crop by APHIS and the concomitant approval by EPA of the herbicide for use on that crop. An example of this occurred when APHIS approved dicamba-tolerant soybeans in 2015, but the concomitant herbicides were not registered by EPA until 2017. However, APHIS cannot legally delay approval of a biotech crop if it does not pose a plant pest risk, nor can EPA "speed up" registration of a herbicide (especially if they don't have the entire data submission package). Thus, the recommendation was for registrants to better time their applications so that the herbicide tolerant crop and its corresponding herbicide are approved during the same crop year. Global HRAC Updates Herbicide MOA Classifications The global herbicide resistance action committee (HRAC) has worked to update and revise the herbicide mode of action (MOA) classification system. The goal is to gradually phase out the old alphanumeric codes. The WSSA board of directors approved the revised HRAC classification system at their annual meeting in March. The updated 2020 Herbicide MOA map, which is divided into three areas: 1) Light Activation of Reactive Oxygen Species, 2) Cellular Metabolism, and 3) Cell Division and Growth can be found at: <https://hracglobal.com/tools/hrac-mode-of-action-classification-2020-map> Bill Authorizing 600 New Agricultural Inspectors Signed into Law.



## Protecting America's Food & Agriculture Act of 2019

This Act was signed into law and addresses the shortage of agricultural inspectors who protect the nation's food supply and agriculture industry and ensure safe and secure trade of agricultural goods across borders. The act authorizes U.S. Customs & Border Protection (CBP) to hire additional inspectors, support staff and K-9 teams to fully staff America's airports, seaports and land ports of entry. The USDA and CBP work together to facilitate safe and secure importation of agricultural goods into the U.S. The program's agricultural specialists and K-9 units conduct inspections of passengers, commercial vessels, trucks, aircraft and railcars at U.S. ports of entry to protect health and safety by preventing the entry of harmful goods and invasive species that may pose a threat to American food and agriculture. On a typical day (prior to COVID-19), inspectors process more than 1 million passengers and 78,000 truck, rail and sea containers carrying goods worth approximately \$7.2 billion. The act authorizes the annual hiring of 240 agricultural specialists a year until the workforce shortage is filled and 200 agricultural technicians a year to carry out administrative and support functions. The act also authorizes the training and assignment of 20 new K-9 teams a year, which have proven valuable in detecting illicit fruits, vegetables and animal products that may have otherwise been missed in initial inspections. Finally, it authorizes supplemental appropriations each year to pay for the activities of the agriculture specialists, technicians and K-9 teams.



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## Federal Noxious Weeds: The Aquatics

The Animal and Plant Health Inspection Service (APHIS) is responsible for preventing the spread of certain foreign weeds into and through the United States. Aquatic weeds pose a significant risk to the Nation's surface water resources. Free-floating and rooted aquatic weeds can clog irrigation channels and cover lakes, threatening crops and wildlife.

Although outlawed, some species on the Federal Noxious Weeds List have been introduced intentionally through aquatic garden and aquarium plant sales and distributed at swap meets. Others have come here unintentionally as contaminants in legal shipments, in ballast water, etc.

For more information on the Federal Noxious Weeds List, including more aquatics, visit [www.aphis.usda.gov/ppq/weeds/](http://www.aphis.usda.gov/ppq/weeds/) on the World Wide Web.



Giant salvinia  
*Salvinia auriculata complex*



Anchored waterhyacinth  
*Eichhornia azurea*



Hydrilla  
*Hydrilla verticillata*



Indian hygrophylla  
*Hygrophylla polysperma*



Oxygen weed  
*Lagarosiphon major*



Limnophila  
*Limnophila sessiliflora*



Monochoria  
*Monochoria vaginalis*



Caulerpa  
*Caulerpa taxifolia*



Pinnate mosquitofern  
*Azolla pinnata*

Photo credits: The photograph of *Monochoria vaginalis* was taken by C. Barre Helquist of the biology department at the Massachusetts College of Liberal Arts and is reproduced by permission. The photograph of *Caulerpa taxifolia* was taken by Alexandre Meinesz, Laboratoire Environnement Marin Littoral, Université de Nice-Sophia Antipolis, and is reproduced by permission. The remaining images are from APHIS photo library.



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## SERVICE PROVIDERS LIST

Texas Aquatic Plant Management Society members are a diverse group that includes professionals who are experts in the management of aquatic plants to promote business, recreation and other aquatic uses and most importantly to preserve the natural aquatic environments. The TAPMS website is now featuring a list of companies owned/managed by our members that provide aquatic plant management services--similar to the 'TAA Availability List' on the Texas Aquaculture Association website.

Aquatic Features, Inc  
Scott Smith  
[scott@aquaticfeaturesinc.com](mailto:scott@aquaticfeaturesinc.com)

AquaMaste Fountains  
Rudi Huber  
[rhuber@aquamasterfountains.com](mailto:rhuber@aquamasterfountains.com)

Helena Agri-Enterprises  
Kelly Duffie  
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Kasco Marine, Inc  
Paul Amos  
[paul@kascomarine.com](mailto:paul@kascomarine.com)

Keycolour  
Rick Purcell  
[rpurcell@keycolour.net](mailto:rpurcell@keycolour.net)

Lochow Ranch Pond and Lake Management  
Jason Chapman  
[jchapman@lochowranch.com](mailto:jchapman@lochowranch.com)

Solitude Lake Management  
Cole Kabella  
[ckabella@solitudelake.com](mailto:ckabella@solitudelake.com)

Vollmar Pond and Lake Management, LLC  
Brad Vollmar  
[brad@texaspondmanagement.com](mailto:brad@texaspondmanagement.com)

To be listed as a service provider, please provide your information online at <http://bit.ly/TAPMS-ServiceProviders>. The person completing the form must be a current TAPMS member. Please coordinate on a single company response to ensure that the appropriate contact person is listed and help to prevent duplicate entries that might delay publication of the list on the website.



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## Contribute to 2019 TAPMS Newsletters

Participation in TAPMS shouldn't end after the conference and this newsletter is a great way to share information. Our editor needs your help to keep the newsletter interesting, timely, and relevant.

Want to share information about an event of interest to the society? Have an interim update on new research or new product testing results? Willing to share a "day in the life of" story for students as a professional in our field or want to write a member highlight about a TAPMS colleague? Have a funny story from field work?

**Don't keep it to yourself—email the editor!**

**The newsletter is what you make it...**

