In this Issue

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Texas Aquatic Plant Management Society Newsletter

On the Water

President's Update

Thank you for being a member of the Texas Aquatic Plant Management Society! Each one of you bring a special perspective and skill set to our society. We as a board have worked on many aspects of the society and our annual conference.

If you haven't registered already our conference is November 19th through 21st in Bryan, hope to see each of you there! The conference is a great opportunity for networking and education in our field. You will enjoy an awesome program.

Have a great summer,
Chris Smith

Meet the TAPMS Board of Directors

President Chris Smith

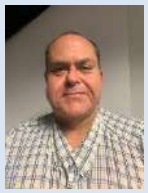
Chris works for Winfield United in the Aquatics and Vegetation Management markets in Southeast and Central Texas. He primarily services lake management companies, industrial herbicide applicators, river and water authorities, utility companies, and various governmental agencies. He has been a member of TAPMS for over 10 years and served as the Editor of TAPMS for 8 years before becoming President this year. He currently resides in The Woodlands, Texas with his wife, Tammy and their three children.

Past President Brad Vollmar

Brad owns and operates Vollmar Pond & Lake Management. He has been a member of Texas Aquatic Plant Management Society for four years and served in multiple capacities.

President-Elect Kristy Kollaus

Kristy Kollaus has a MS in Aquatic Resources from Texas State University and currently works for the Edwards Aquifer Authority as an Environmental Scientist. Prior to working at EAA, she was involved in completing aquatic vegetation restoration in the San Marcos River associated with the Edwards Aquifer Habitat Conservation Plan. She has been a member of TAPMS since 2017.



Secretary Dave Bass

Dave has been involved with aquatic plant management for 11 of his 22 years at the Lower Colorado River Authority. He has focused on reservoir ecology, but aquatic plant management on the Highland Lakes in central Texas has recently become a substantial part of his work. Dave received a B.S from Louisiana Tech University in 1991 and a M.S from Texas State University in 2000. Dave has been a member of TAPMS for 12 years, and has served as a Board member, Treasurer and Secretary.

Treasurer John Findeisen

John earned a Bachelor of Science in Wildlife and Fisheries Sciences from Texas A&M University (1992) and a MS in Biology (emphasis in Aquatic Biology) from Southwest Texas State University (1997). John began his career with TPWD as a seasonal fish and wildlife technician in the College Station/Houston District office; eventually leaving to attend graduate school. After completing his graduate coursework in 1996, John was briefly employed at SWTSU as an aquatic biologist but returned to TPWD as a fish and wildlife technician in Wichita Falls, Texas. John was promoted to assistant team leader in the Corpus Christi District Fisheries Management Team in 1998 and then to team leader of the Corpus Christi Fisheries Management Team in 1999. In 2016, John transferred to his current position as team leader of TPWD's Aquatic Habitat Enhancement Team overseeing the state's aquatic vegetation control program. John has been a member of the Texas Chapter of the Amercian Fisheries Society since 1995 and served a co-chair of the Exhibits and Publicity Committee and a member of the Scholarship Committee. John has served on the TAPMS Board for two years.

Editor Melani Howard

Melani Howard is the Habitat Conservation Plan Manager for the City of San Marcos and Texas State University. She began working for the City and University in 1996 and completed her Master's Degree in Aquatic Ecology at Texas State University in 1998. She has implemented multiple award-winning programs to protect endangered species habitat in the San Marcos River – from removal of invasive species and community litter cleanups to restoration of degraded watersheds. She has been a member of TAPMS for almost two years.

Director Jason Chapman

Jason Chapman has served on the TAPMS board of directors since November of 2017. He graduated from Texas A&M University in 2006 with a B.S. in Fisheries Ecology and Management and now is the Operations Manager for Lochow Ranch Pond and Lake Management LLC. Jason has worked for Lochow Ranch since August of 2006 where he started as a field biologist. He has extensive experience in fisheries and aquatic vegetation management and leads crews to combat aquatic invasive species across the state and promote healthy aquatic environments.

Director Joshua Flowers

Joshua Flowers is the chief steward at Twin Oaks Pond Lake Management & Consulting. Mr. Flowers is member of APMS/TAPMS and TCAFS/AFS, and currently volunteers as an instructor for Bass Brigade-Texas Brigades. Prior to becoming Chief Steward, Mr. Flowers was a Forest Service Fire Fighter, Resource Biologist trainee, and served for the United Sates Navy. Mr. Flowers is actively seeking out opportunities that challenge and teach him new skills in the industry. He loves teaching and encouraging others to become better versions of themselves.

Director Monica McGarrity

Monica holds a Bachelor of Science in Biology from Old Dominion University in Virginia and a Master of Science in Biology from Florida Atlantic University. Monica has 13 years of experience working with invasive species in many capacities—species ranging from aquatic/riparian plants to zebra mussels to pythons. She is currently Senior Scientist for Aquatic Invasive Species at Texas Parks and Wildlife Department, where her work encompasses diverse aspects of invasive species prevention, detection, ecology, management, and research. Monica represents TPWD on several interagency working groups including the Western, Mississippi River Basin, and Gulf and South Atlantic States Regional Panels of the Aquatic Nuisance Species Task Force, and the Texas Invasive Species Coordinating Committee. Monica serves as a director on the boards of the Texas Invasive Plant and Pest Council, and Texas Aquatic Plant Management Society.

Director Zach Pritchard

Zachary Pritchard earned his Bachelor of Science in Wildlife Management in 2013 from Tarleton State University. After experience in other industries, Mr. Pritchard began PondMedics in 2014 with an entry level position managing aquatic plants. Mr. Pritchard is now a Senior Project Manager with PondMedics, specializing in areas such as aquatic plant management, hydrographic surveys, dam/spillway rehabilitations, stream and storm water conveyance management, hybrid shoring solutions, and multi-scale dredging. He has been a member of the Texas Aquatic Plant Management Society for two years and is a three-year member of The Society of Lake Management Professionals. Zach resides in Denton County, Texas with his wife, Kelli and their three children. When Zach is not busy at PondMedics, he enjoys spending time with his family hunting, fishing, riding bicycles, travelling, and just being outside. Zach has a passion for the outdoors and aquatics is a big part of that.

Director Tom Warmuth

Tom Warmuth has served on the TAPMS board of directors since November of 2017. He is the National Lake, Pond and Municipal Technical Representative for BioSafe Systems. He is also the president elect of the Western Aquatic Plant Management Society, the Scholastic Endowment Chair for the National Aquatic Plant Management Society, and Director and Sponsorship Chair for Texas Aquatic Plant Management Society. Tom grew up in Fairport Harbor, on the Northeast Ohio shores of Lake Erie. With over 20 years of experience in the industry, he is a graduate of East Carolina University with a degree in Biology where he began his work in aquatics and pesticides in mosquito control work for 3 years while completing his undergraduate degree. Tom's aquatic pesticide experience continued in Florida in mosquito and public health pest control, environmental consulting, permitting and aquatic habitat management. More recently, Tom worked in the lake management industry, aquatic herbicide distribution, and at BioSafe Systems. He currently lives in North Carolina with his wife, Sara.

Texas Aquatic Plant Management Society

Annual Conference November 19-21, 2019

Located at:

The Stella Hotel
4100 Lake Atlas Drive
Bryan, TX 77807
979-421-4000

Register online @ www.tapms.org

Education, Networking, Exhibitors, Industry Information, Food, Golf

All TAPMS members and others who are interested in aquatic plant management, biology or ecology, or who are involved in the protection, management and restoration of water and wetland resources, are invited to attend the 2019 TAPMS Annual Conference. Whether you work in the public or private sector, as an aquatic weed management professional, water resource manager, researcher, or regulatory official, the 2019 conference will deliver up to date information on aquatic weed management tools and techniques, recent technological advances, research results that are relevant to your work, laws and regulations, public outreach initiatives, and TAPMS business. TDA certified aquatic pesticide applicators will receive CEU credits for attending. **The 2019 TAPMS Annual Conference will be held on November 19-21**, **2019** at the Stella Hotel; included in your conference registration: Wednesday breakfast, AM & PM breaks and banquet dinner.

Member Spotlight on Andy Labay

Andy Labay has been an active member of TAPMS for six years. In 1992, he received his Masters of Science at Southwest Texas State University (now Texas State) specializing in Ichthyology under Dr. Bobby Whiteside. Andy is a certified fishery professional (American fisheries Society) and has been working in the aquatic ecosystem management field for over 27 years in various capacities. He began his career as a fisheries technician for Texas Parks and Wildlife Department in San Marcos and later transitioned to the State's Kills and Spills Team where he investigated fish kills and pollution incidents throughout much of Texas. After nine years of state service, Andy transitioned to private environmental consulting in 2001. Among other projects, he worked closely with the electric utility industry, assisting with Clean Water Act Section 316(b) permitting, Federal Energy Regulatory licensing of Lake Livingston Dam hydroelectric facility on the Trinity River, and various environmental impact studies.

Andy's wife, Holly, has been his business partner for 26 years. They have two grown children, Zachariah and Lauren. Holly started off as an elementary school teacher, but after having the children, it became their priority to keep mom and the kids together. To help make ends meet on a state salary, Holly and Andy formed L&L Lake Management while living in Tyler. Working with land owners and managing lakes was

the states' oldest engineering firm, Freese and Nichols, Inc., while working with Holly to grow their business.

Holly and Andy decided to expand their interest in lake management. In 2008, they bought an old fish hatchery in Altair, near Andy's hometown and L&L Lake Management Service morphed into Southwest Aquatic Services, LLC. The fish hatchery helped diversify their lake management business and provide growth opportunity. By this time, the kids were old enough to help work the fish ponds. The fish hatchery hadn't been used since the 1960's, so considerable sweat equity went into restoring the overgrown and leaking ponds.

Over the years of the hatchery remaining fallow, native, emergent plants had returned to the old ponds. Having worked on restoration projects, the couple realized the plants had value and they began growing and marketing native wetland plants. In 2011, they obtained a Texas Department of Agriculture nursery license and in 2014 a separate wetland pond was built on the land that is maintained by water from their fish ponds. Andy and Holly are still trying to work out the bugs in the nursery business. The plants are grown in the outdoor wetland complex and there is considerable labor involved with maintaining the plants and the market is very unpredictable.

Their nursery has supplied plants for a variety of projects including establishment of duck and fish habitat for private land owners, TPWD projects, the Waco Wetland Demonstration Project, and the beautification of the lower reach of the San Antonio river walk for in the San Antonio River Authority and the City of San Antonio.
Their son, Zachariah (Zack) recently joined the business full time. Southwest Aquatic Services also has seasonal employees and offer students the opportunity to gain experience in the field. Andy is also serving a third term on board of directors for the Colorado County Groundwater Conservation district.

Bass Brigade

Leadership – Stewardship – Conservation

I would like to introduce you to Bass Brigade, a student leadership camp which focuses on fisheries conservation. Bass Brigade is part of Texas Brigades (www.texasbrigades.org), whose mission is to empower high school youth with skills and knowledge in wildlife conservation, land stewardship, team-building, communication, and leadership to become ambassadors for conservation in their communities. The top 24 applicants, ages 13 to 17, who apply to attend the weeklong camp are selected.

The cadets are taught by leading biologists from Texas Parks & Wildlife, Texas AgriLife Extension Service, industry leaders from the private sector, and professional angler Gary Klein. Throughout the camp cadets compete individually and as groups, for prizes including fishing related items, fishing trips, gift cards, and other outdoors items. All cadets are rewarded for being selected to attend camp with items from sponsors. Camp cadets who go back into their communities and spread the conservation message are rewarded by becoming eligible to receive college scholarships, and being invited back to camp as assistant leaders.

Bass Brigade is held at the prestigious Warren Ranch (http://www.warrenranch.net) in Coleman County, Texas. The camp is funded in part by $500.00 tuition for each cadet along with donations from our friends, supporters, and various industry professionals. The Texas Brigades program is a 501(c)(3) non-profit organization and contribution(s) may be tax deductible.

Photos From the Field

Jeff Spillars from Airmax has shared some photos taken during a road show across the country setting up new fountains.

Send photos from the field and we will post in our newsletter!

2018 Aquatic Weed Survey Results

The complete 2018 survey results for weeds in aquatic and non-crop areas are available at http://wssa.net/wssa/weed/surveys/.

The most troublesome aquatic weed was hydrilla and most troublesome in the four non-crop areas was cogongrass. Not surprisingly, both weeds are on the federal noxious weed list. What was surprising is that hydrilla was also the most common aquatic weed in the U.S. (See Aquatic weed survey results below)

Top 10 Most Common and Most Problematic Weeds Among Canals, Lakes, Reservoirs, Rivers, Ponds

Ninety-three survey respondents ranked:

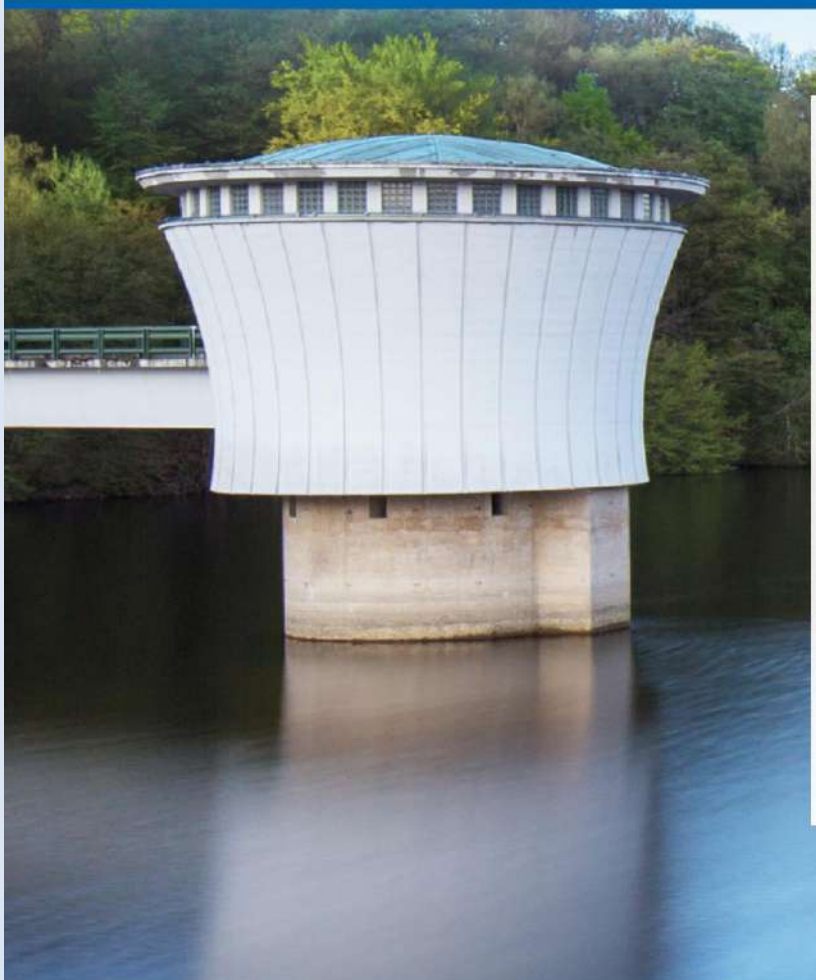
Most Common

1 hydrilla (42)
2 milfoil spp (38)
3 pondweed spp (30)
4 water hyacinth (26)
T5 ludwigia spp (18)
T5 naiad spp. (18)
T7 algae spp (17)
T7 coontail (17)
9 alligatorweed (16)
10 water lettuce (13)

Most Problematic

1 hydrilla (43)
2 milfoil spp (41)
3 water hyacinth (28)
T4 alligatorweed (18)
T4 crested floating heart (18)
T6 Ludwigia spp (16)
T6 pondweed spp (16)
8 algae spp (14)
9 giant salvinia (13)
10 tie among 2 species (11)

CLEAN CONTROL OF CYANOBACTERIA.



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Showcasing Student Research

Andrew Howell is a PhD student and graduate research assistant at North Carolina State University in the Department of Crop and Soil Sciences, under the direction of Dr. Rob Richardson. He received his BS in Crop Production, and MS in Crop Science at NC State where he focused on the early detection, mapping, and monitoring of invasive submersed vegetation using traditional sampling regimes, and boat-based remote sensing technologies. For his PhD research, Andrew is investigating the utilization of unmanned systems in aquatic and non-cropland vegetation management and how these platforms will contribute in making prompt and informed management decisions. Andrew received the TAPMS 2018 Student Scholarship and the Best Student Presentation award.

Evaluating Unmanned Innovations for Invasive Plant Mapping and Management

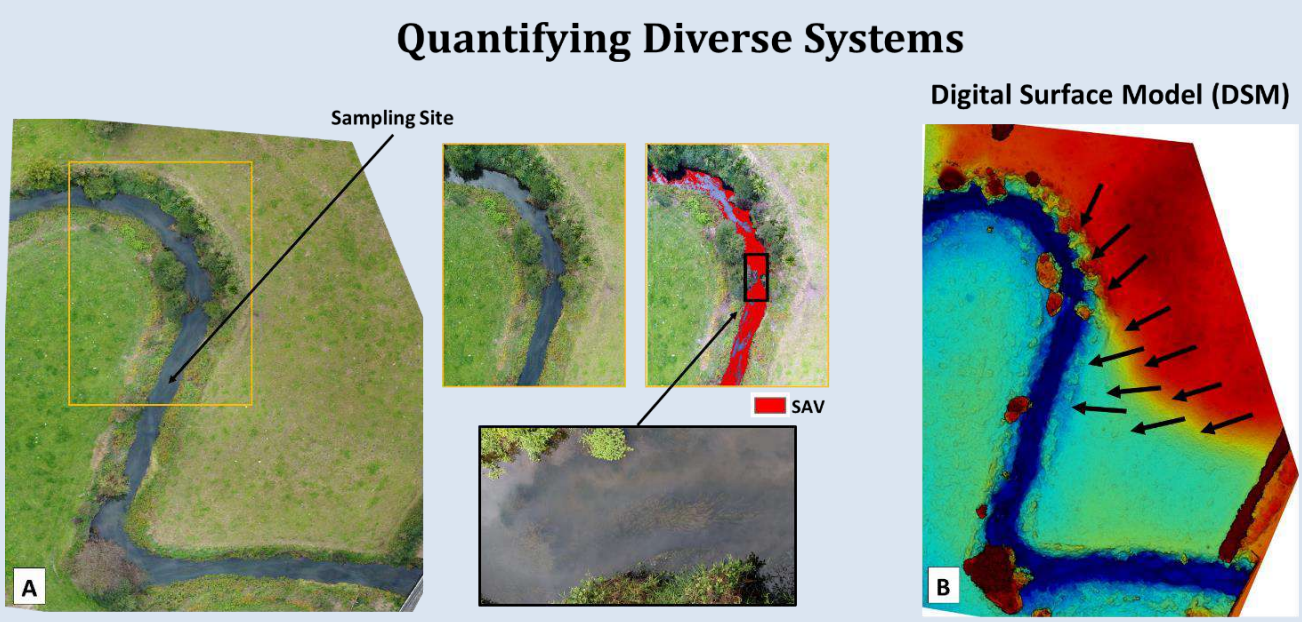
Invasive exotic macrophytes, such as *Hydrilla verticillata*, *Salvinia molesta*, and *Phragmites australis*, often have undesirable effects on native aquatic ecology and the associated local economy within invaded regions. It is well accepted that timely monitoring and efficient mapping strategies are essential for evaluating native and exotic aquatic vegetation, and also to provide management direction for rapid response or gauge management effort success. While many aquatic plant survey techniques are well-established, most assessments require a skilled workforce and there is often subjectivity among surveyors which can lower survey accuracy and efficiency. Likewise, these methods require considerable labor and time inputs, as the extent of waterway evaluations are correlated with the precision, spatial coverage, and duration spent evaluating each monitoring location. The recent popularity of low-cost, off-the-shelf unmanned aerial systems (sUAS) has generated multiple paths for aquatic plant researchers and managers to explore. In addition to providing a platform for small optical imagers, sUAS potentially provide opportunities to remotely deliver herbicide applications. Andrew's research delves into the use of consumer available sUAS to summarize varying macrophyte components among diverse waterways throughout North Carolina, the southeast US, and New Zealand. Among recent studies, Andrew has documented the use of sUAS for supporting rapid response measures, summarizing community dynamics, and shown how unmanned equipment may be incorporated in treatment programs and post-treatment monitoring efforts.

Current, and future, research aims to evaluate these systems to provide forefront management tools, ones that promote novel invasive species management strategies. Below are highlighted sUAS projects from the 2018-2019 field season.

- Quantifying regions of SAV infestations among lentic and lotic systems
- Monitoring treatment efforts of problematic floating species
- Estimating standing biomass of exotic wild rice invasions (doi:10.1117/12.2519199)
- Supporting search-and-locate diver and boat-based mapping efforts

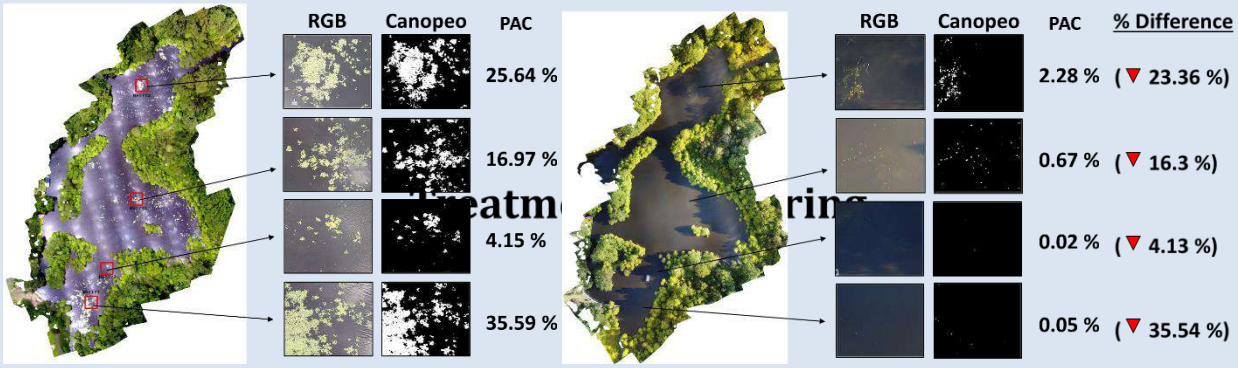
Research is in full swing as we near the halfway mark on 2019. Look for an exciting update on this season's data, which focuses on non-destructive phragmites quantification, remote monitoring of *Lyngbya wollei* populations, and helpful sUAS guides for management!

<u>Research Highlights</u>:



Riverine environment located in the Waikato Region, NZ known to contain exotic submersed aquatic vegetation (SAV) specifically, *Egeria densa* and *Lagarosiphon major.* A). SAV detection using GIS image classification procedures from a series of true-color aerial photographs. Plant assessments may be used to correlate spatial locations of known submersed plant species confirmed using *in situ* techniques. SAV occupancy (PAC) along the lotic system can also be associated with water quality parameters (eg. DO, pH, alkalinity, turbidity, Total P, etc.) to describe plant presence or absence dynamics. B). Using DSM to define stream structure, and denote elevation influence from surrounding pastureland to water quality measurements near SAV.

Treatment Methods



Pretreatment **2 MAT**

Example of percent area cover (PAC) evaluations pre- and post-treatment among a backwater region in Lake Moultrie, SC infested with *Nymphoides cristata*. True-color aerial images captured at 200' coupled with image classification applications assisted in quantifying treatment success over time and provided visual aid to stakeholders.

Andrew prepares a sUAS mission to scout a recently formed giant salvinia population found among managed cutgrass stands at Lake Marion, SC (left). A sample image of pre-treatment data used to determine the efficacy of treatment efforts, with a zoom-in of PAC quadrat**.**

Contribute to 2019 TAPMS Newsletters

Participation in TAPMS shouldn't end after the annual conference and this newsletter needs you to stay interesting, timely, and relevant.

Want to share information about an event of interest to the society? Have an 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!

Mhoward@sanmarcostx.gov