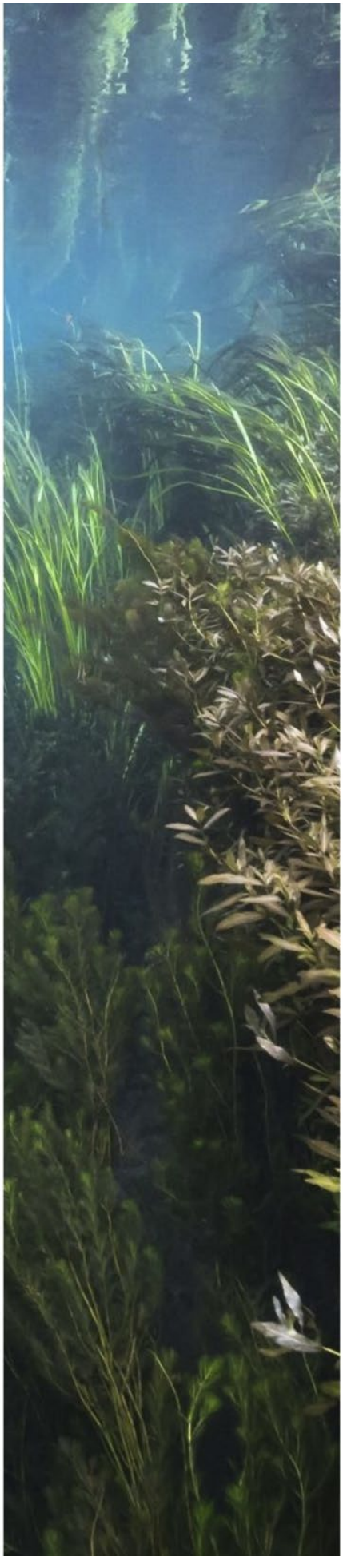
2024
ANNUAL MEETING
AGENDA

Texas Aquatic Plant Management Society



Texas Aquatic Plant Management Society

The Texas Aquatic Plant Management Society (TAPMS) is a regional chapter of the Aquatic Plant Management Society—an international organization of scientists, educators, students, aquatic herbicide applicators, administrators, and concerned individuals interested in the management and study of aquatic plants. The TAPMS consists of aquatic vegetation management professionals, companies, researchers, students, and Extension specialists dedicated to aquatic vegetation management issues in Texas. Our focus is informing youth and adults about aquatic vegetation management and preservation of natural aquatic environments, including control of invasive aquatic plant species and conservation and propagation of native aquatic plant species including rare or threatened species.

Website: www.tamps.org

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Special Acknowledgments: The 2024 Texas Aquatic Plant Management Society Annual Conference would not have been possible without the efforts of Carlton Layne / Aquatic Ecosystem Restoration Foundation for student presenter travel support, the TAPMS Board of Directors, and the many presenters and exhibitors who helped to make this conference an outstanding event. We are especially grateful for the support of our conference sponsors, which are acknowledged in this program.

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Texas Aquatic Plant Management Society

2024 Annual Meeting

Agenda

Tuesday, November 12, 2024

Time	Title	Location
11:00 AM – 12:00 PM	Tour of The Headwaters at the Comal	333 E Klingemann St, New Braunfels, TX 78130
12:00 – 1:00 PM	Aquatic Plant ID Workshop – Lunch Provided	
1:00 PM – 2:00 PM	Texas Arundo Alliance	
3:00 PM – 5:30 PM	Annual Meeting Early Check-In and Onsite Registration	**New Braunfels Civic Center** 375 S Castell Ave, New Braunfels, TX 78130
5:30 PM – 9:00 PM	President's Reception – *Theme Night: The Power of Teamwork in Aquatic Plant Management*	**Faust Brewery** 499 S Castell Ave, New Braunfels, TX 78130

Wednesday, November 13, 2024

Location: New Braunfels Civic Center **|** 375 S Castell Ave, New Braunfels, TX 78130

Time	Title	Presenter(s)
7:00 AM	Conference Check In, Onsite Registration, Breakfast	**New Braunfels Civic Center** 375 S Castell Ave, New Braunfels, TX 78130
8:00 AM	President's Welcome – ***Ballroom***	**Haley Kokel** – TAPMS President
8:15 AM	Statewide Integrated Pest Management of Aquatic and Riparian Invasive Species (*1 IPM CEU*)	**John Findeisen and Monica McGarrity** Texas Parks and Wildlife Department
9:15 AM	Current Status of Giant Salvinia Biological Control in Texas and Future Opportunities (*1 General CEU*)	**Megann Harlow** Engineer Research and Development Center
10:15 AM	Morning Refreshment Break – ***Garden Rooms***	
10:35 AM	Texas Pesticide Laws & Regulations (*1 Laws and Regulations CEU*)	**Elizabeth Prokop** Texas Department of Agriculture
CEU Check-In – Use QR Code		
11:35 AM	Lunch Break (*on your own*)	
12:45 PM	Lessons learned from two decades of invasive aquatic species management and efforts to restore native vegetation in a Central Texas reservoir (*1 General CEU*)	**Brent Bellinger** City of Austin
1:45 PM	Understanding Stakeholder Perceptions and Preferences in Aquatic Plant Management: A Panel Discussion (*1 General CEU*)	**Panelists:** Patrick Ireland, Kristina Tolman, Dr. Angela England, Dr. Todd Sink **Moderator:** Brittany Chesser
CEU Check-In – Use QR Code		
2:45 PM	Platinum Sponsor - Phoslock	**Bush Heathman** – Phoslock
2:50 PM	Behavior and Efficacy of Florpyrauxifen-benzyl and 2,4-D for Controlling Eurasian Watermilfoil (*Myriophyllum spicatum*) in Bear Lake	**Olanrewaju Adeyemi** Utah State University
3:10 PM	Using Vegetation Communities to Compare Natural and Constructed Wetlands	**Kennedi Davis** University of Texas at Tyler
3:30 PM	Using herpetofauna to determine wetland health and function in the Red River watershed	**Shelby Rodriguez-Edwards** University of Texas at Tyler
3:50 PM	Afternoon Refreshment Break – ***Garden Rooms***	
4:10 PM	Implications of Global Warming on Coastal Wetlands: Discussing the Success of *Phragmites australis* and Nitrogen Cycle Dynamics	**Ava Miller & Chevy De La Serna** Texas State University
4:30 PM	Salt marsh plant functional trait variation as an indicator of drought resilience in the Nueces Delta, TX	**Sophia McKelvey** University of Texas at Austin
4:50 PM	The Effects of Nutrient Loading and Mowing on the Growth and Reproduction of Invasive Sedge *Cyperus entrerianus*	**Sabrina Sanders** Texas State University
5:10 PM	Effects of Humic Acid on Harmful Algal Bloom Management and Nutrient Binding	**Brittany Chesser** Texas A&M University
5:30 PM	Annual TAPMS Business Meeting - Pesticide Applicators Receive CEU Certificates	
6:30 PM	Networking Reception at ***Krause's Cafe***	**Krause's Cafe** 148 S Castell Ave, New Braunfels, TX 78130
7:00 PM	Banquet Dinner & Awards at ***Krause's Cafe***	

Texas Aquatic Plant Management Society

2024 Annual Meeting

Agenda

Thursday, November 14, 2024

Location: New Braunfels Civic Center **|** 375 S Castell Ave, New Braunfels, TX 78130

Time	Title	Presenter(s)
7:30 AM	Conference Check-In	**New Braunfels Civic Center** 375 S Castell Ave, New Braunfels, TX 78130
8:30 AM	Welcome – ***Garden Rooms***	**Haley Kokel** – *TAPMS President*
8:40 AM	Natural Organic Microsponge™ Technology Improving Vegetation, Algae and Aquatic Weed Control	**Dr. Lucia Marshall** Biosorb Inc.
9:00 AM	Updates from AquaExtension: Aquatic Vegetation Outreach	**Brittany Chesser** Texas A&M AgriLife Extension Service
9:20 AM	Managing Aquatic Life and Vegetation at Cassin Lake: Preparing for San Antonio's Future Community Fishing Lake	**Mitch Magruder** San Antonio River Authority
9:40 AM	Diamond Sponsor - Edwards Aquifer Habitat Conservation Plan	**Olivia Lopez** Edwards Aquifer Authority
9:50 AM	Morning Refreshment Break – ***Garden Rooms***	
10:05 AM	The Formative Days of TAPMS	**Joyce Johnson and Malcolm Johnson**
10:45 AM	Purposeful Planting: Selecting Aquatic Plants for Your Pond and Lake Goals	**Haley Kokel** Fish On Aquatic Plants
11:05 AM	**Closing Remarks/End of Day**	
11:30 AM	TAPMS Post Conference Board Meeting	

QR Codes

CEU Course Sign-in:

Texas Aquatic Plant Management Society
2024 Annual Meeting

Events Information

Professional Development Workshops: Tuesday, November 12 | Headwaters at the Comal

- **Tour of the Headwaters at the Comal:** Join us for a tour of the Headwaters at the Comal to explore ongoing aquatic and riparian restoration efforts. This nature-focused community space serves as a hub for research, education, and gathering. Discover the rich history and ecological significance of the Comal River and its spring system, and learn why conserving this unique resource is so important.
- **Aquatic Plant ID Workshop:** Learn about plant physiology and basic taxonomy of native and non-native plants.
- **Texas Arundo Alliance:** The Texas Arundo Alliance (TAA) aims to enhance collaboration and information sharing among professionals managing Arundo. By creating a community for government officials, nonprofit staff, herbicide applicators, and academics, the group seeks to bridge communication gaps and promote successful management strategies across Texas.

President's Reception: Tuesday, November 12 | Faust Brewery

Join your TAPMS friends and colleagues at the Presidents' Reception to network and socialize while enjoying food and beverages. The President's Reception is open to all registered attendees. Non-registered guests may purchase tickets at the meeting registration desk.

Theme Night: Tuesday, November 12 | Faust Brewery

Join us at the TAPMS President's reception for a lively evening celebrating the spirit of teamwork in aquatic plant management! Just like in sports, collaboration is key to achieving success in our field. Wear your favorite sports team's gear and show off your team pride as we dive into engaging discussions, Networking and building stronger connections within our community! **Dress Attire:** Show your team spirit by wearing jerseys, hats, shirts, or other gear from your favorite sports teams!

Plant ID/Exhibitor Visit Raffle: November 13-14 | New Braunfels Civic Center - Garden Room

Meeting attendees will have the chance to win a raffle drawing if they visit each vendor booth, writing down the name of the vendor and plant pictured at each booth. Two winners will be drawn during the Networking Reception prior to the Banquet. Each winner will be awarded 12 raffle tickets.

Annual Business Meeting: Wednesday, November 13 | New Braunfels Civic Center - Garden Room

All TAPMS members are encouraged to attend the TAPMS Annual Business Meeting for Society updates. This meeting will be held following the conclusion of the Wednesday General Session.

Networking Reception: Wednesday, November 13 | Krause's Cafe

Enjoy socializing with your TAPMS friends and colleagues at the cocktail hour while enjoying beverages before the banquet dinner and awards begin. The winners of the Plant ID/Exhibitor Visit Raffle will be drawn during this event!

Banquet Dinner & Awards: Wednesday, November 13 | Krause's Cafe

Registered attendees are invited to attend the Awards Banquet. Non-registered guests may purchase tickets at the meeting registration desk. During/after dinner, we will recognize those who have served TAPMS, welcome new officers and directors, and present this year's student presentation award and scholarship recipients.

Texas Aquatic Plant Management Society
2024 Annual Meeting
Wednesday, November 13, 2024

PRESENTATION ABSTRACTS AND PRESENTER BIOGRAPHIES

Abstracts are listed by order of presentation
* Indicates student presenter
CEU Indicates attendance credit of 1.0 CEU

Title: Statewide Integrated Pest Management of Aquatic and Riparian Invasive Species CEU
Presenter(s): John Findeisen and Monica McGarrity
Affliation: Texas Parks and Wildlife Deparment

Abstract:
This presentation will provide an update on Texas Parks and Wildlife Department's aquatic vegetation and invasive species management efforts in Fiscal Year 2024 (Sept. 2023 – Aug. 2024), 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). 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.

Presenter Biographies:

John Findeisen is currently the Team Leader for the Texas Parks and Wildlife Department's Aquatic Habitat Enhancement (AHE) Team in Brookeland, Texas. He earned a B.S. in Wildlife and Fisheries Sciences from Texas A&M University and a M.S. in Biology (emphasis in Aquatic Biology) from Southwest Texas State University. John has been employed by the Texas Parks and Wildlife Department for 20+ years as a fisheries management biologist and transferred from the Corpus Christi District fisheries management team to the AHE team in February 2016.

Monica McGarrity 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 19 years of experience working with invasive species in many capacities and 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, the Texas Invasive Species Coordinating Committee and numerous other regional committees.

Title: Current Status of Giant Salvinia Biological Control in Texas and Future Opportunities CEU
Presenter(s): Megann Harlow
Affliation: Engineer Research and Development Center (ERDC)

Abstract:
Giant salvinia (*Salvinia molesta Mitchell*) is an invasive aquatic fern that forms dense floating mats on water surfaces that disrupts native habitats, impedes water flow, and impairs recreational and economic activities in much of the southeastern US. To address this, a biological control program was implemented in Louisiana and Texas in 2001 by using the salvinia weevil (*Cyrtobagous salviniae* (Calder & Sands) (*Coleoptera: Curculionidae*)), a

natural predator of the plant in South America. Since 2012, ERDC researchers and resource managers have mass-reared *C. salviniae* and performed augmentative releases and long-term monitoring of weevil populations on two East Texas lakes, namely Sam Rayburn and Steinhagen. Weevil population data is utilized by lake managers to strategically target seasonal herbicide applications, reducing chemical usage and associated management costs. In addition, this weevil population has been restocked and relocated across the region to help other lake managers combat the weed in other water bodies. In the warmer Gulf Coast regions, the weevils have successfully reduced giant salvinia coverage and is considered a valuable tool for giant salvinia management. However, overwintering of the weevil populations are often problematic, especially in the higher latitudes as the giant salvinia invasion expands to more temperate climates. Ongoing and upcoming work by ERDC will investigate regional variation in giant salvinia weevil cold tolerance. Additionally, the potential for discovering new, cold-tolerant biocontrol agents in the native range is being investigated in coordination with South American scientists.

Presenter Biography:
Megann Harlow is a Research Biologist at the Engineer Research and Development Center (ERDC) Environmental Laboratory's Aquatic Ecology and Invasive Species Branch, stationed at the Lewisville Aquatic Ecosystem Research Facility (LAERF) in Texas. Her research focuses on the management strategies of aquatic invasive weeds, particularly biological control. She has experience working with the following aquatic weeds and their insect agents: Giant salvinia, Alligator weed, Water hyacinth, Parrotsfeather, and Brazilian peppertree.

Title: Texas Pesticide Laws & Regulations [CEU]
Presenter(s): Elizabeth Prokop
Affliation: Texas Department of Agriculture

Abstract:
An overview of Texas Pesticide Laws & Regulations including record keeping, updates to the endangered species act, complaints, continuing education units, and TDA Pesticide Waste Disposal Events.

Presenter Biography:
Elizabeth Prokop is currently the Coordinator for Agricultural Pesticide Certification & Compliance at The Texas Department of Agriculture in Austin, TX. Elizabeth has over 10 years of experience working with Texas agricultural, environmental, and oil & gas regulatory programs. She holds a Bachelor of Science in Environmental Science from the University of Texas at Austin and works on her home's vegetable and pollinator garden in her spare time.

Title: Lessons learned from two decades of invasive aquatic species management and efforts to restore native vegetation in a Central Texas reservoir [CEU]
Presenter(s): Brent Bellinger
Affliation: City of Austin

Abstract:
The Lake Austin reservoir in Austin, Texas is a narrow reservoir that is a popular recreational resource, but the primary functions are to provide drinking water and flood water conveyance. Invasion by the non-native plant *hydrilla* (*Hydrilla verticillata*) around the year 2000 resulted in rapid spread through the upper reservoir displacing native submerged aquatic vegetation (SAV) and Eurasian watermilfoil (*Myriophyllum spicatum*) and negatively impacted the system's primary functions by impeding flood water movement and damaging the downriver dam. Because of the municipal use and rapid spread of *hydrilla*, herbicides were eliminated as a viable management option and triploid grass carp (*Ctenopharyngodon idella*) were stocked. As the grass carp rapidly consumed the hydrilla, a partnership between the Austin Watershed Protection Department and U.S. Army Corps of Engineers was established in 2002 toward re-introduction, protection, and hopeful spread of native SAV. Herbivore exclusion cages were installed to establish "founder colonies" of native SAV. Various species and cage sizes were tested, but all of them were effective in protecting and promoting growth of native SAV, to a point. The promulgation of SAV stopped at the edge of the cages. Beyond that, growth was inhibited by grass carp as well as turtles and other herbivores. Surprisingly, neither non-native SAV species thrived within the enclosures. Enlargement of pens coupled with the eventual decline in grass carp numbers enabled a slow spread of SAV into the open water environment. However, observations in 2023 found that, beyond the immediate vicinity of the cages, Eurasian watermilfoil was instead rapidly expanding. *Hydrilla* biomass remains minimal, so far. The conclusion of the long-

term planting and observational efforts suggest that non-native SAV is likely to overwhelm native plants due to their growth rates and ability to effectively spread by fragmentation. Future management considerations will be further discussed.

Presenter Biography:
Brent Bellinger an aquatic ecologist and has studied and monitored ecosystem conditions and linkages as influenced by anthropogenic activities from the Great Lakes to the Florida Everglades before settling in Austin, TX. The goal of my research is to gain enough understanding of what is driving conditions to make informed active management decisions that will enhance ecosystem services being provided by the aquatic environment.

Title: Understanding Stakeholder Perceptions and Preferences in Aquatic Plant Management: Panel Discussion [CEU]
Panelists: Patrick Ireland (Texas Parks and Wildlife Department), Kristina Tolman (Edwards Aquifer Authority), Dr.Angela England (Texas Parks and Wildlife Department) and Dr. Todd Sink (Texas A&M University).
Moderator: Brittany Chesser

Abstract:
This panel discussion is aimed at providing its members with deeper insights into the beliefs and patterns of various stakeholder groups related to aquatic plant management. This panel features a diverse group of professionals representing primary stakeholder groups such as the public, private pond owners, recreationalists, and others. By bringing together experts who interact regularly with these stakeholder groups, the discussion aims to illuminate the main concerns and challenges perceived by stakeholders, such as cost and application methods, and explore the patterns of preferred or non-preferred types of control. This panel presents an invaluable opportunity for TAPMS members to gain a deeper understanding of stakeholder perspectives, which can inform more effective and inclusive approaches to aquatic plant management.

Presenters Biographies:
Patrick Ireland is the fisheries biologist supervisor for the Texas Parks and Wildlife Department San Marcos / Austin management district. The TPWD San Marcos / Austin District has been heavily engaged with aquatic plant management as it relates to the various user groups on a variety of public waterbodies in Central Texas. Prior to relocating to central Texas in 2018, Patrick worked as a fisheries biologist in Louisiana and as an environmental consultant for the oil and gas industry throughout Texas. Patrick completed his graduate work at Texas A&M studying the effects of Grass Carp on native aquatic vegetated habitat in Lake Conroe, Texas in 2008-2009 and also worked for Texas A&M and Texas Water Resources Institute studying control methods for Giant Salvinia on Caddo Lake.

Dr. Angela England works as a Conservation Biologist on Texas Parks and Wildlife Department's Watershed Conservation Team. She is the project manager for the Healthy Creeks Initiative to control Arundo in the Hill County, coordinating invasive plant surveys and herbicide treatments on around 400 properties across five watersheds. Angela received her Bachelor's degree from U.T. Austin, and her Ph.D. from the University of New Mexico. She has been a TDA licensed pesticide applicator in the aquatic category since 2018, as well as an ISA Certified Arborist and a Texas Master Naturalist. Previously, Angela worked for the City of Austin's Watershed Protection Department and Travis County's Department of Natural Resources, taught biology and ecology at the University of New Mexico, conducted bat research with the U.S. Geological Survey, and spent eight years working for Bat Conservation International.

Kristina Tolman has worked as a Habitat Conservation Plan Coordinator at Edwards Aquifer Authority (EAA) since 2016. Prior to EAA, she worked as a GIS Analyst at the Meadows Center for Water and the Environment at Texas State University. She received her bachelor's degree in Geography and her Masters of Applied Geography for Environmental Resource Studies at Texas State University. Her thesis was a comprehensive habitat suitability analysis of the endangered aquatic plant, Texas wild-rice, in the San Marcos River. In her free-time she enjoys gardening and kayaking rivers in Central Texas.

Dr. Todd Sink earned his Bachelor's degree in Fisheries and Aquatic Science from Purdue University, and his Ph.D. in Natural Resources, specializing in fish stress and disease physiology, from the University of Tennessee. After

working as a postdoctoral researcher at the University of Tennessee and the University of Arkansas at Pine Bluff, he began his current position as an Associate Professor in the Department of Rangeland, Wildlife, and Fisheries Management at Texas A&M University (TAMU). Dr. Sink is also an Aquaculture Extension Specialist at the Texas A&M AgriLife Extension Service and the Director of the TAMU Aquatic Diagnostics Laboratory, which is the only fish disease pathology and waterborne toxin testing laboratory in the state of Texas.

Title: Behavior and Efficacy of Florpyrauxifen-benzyl and 2,4-D for Controlling Eurasian Watermilfoil (*Myriophyllum spicatum*) in Bear Lake*

Presenter(s): Olanrewaju Adeyemi
Affliation: Utah State University

Abstract:
Bear Lake is facing significant challenges posed by Eurasian watermilfoil (*Myriophyllum spicatum*; EWM). This invasive species disrupts the natural ecosystem and degrades water quality by forming dense canopies, adversely affecting fish populations, water temperature, and oxygen levels. To address this issue, this project examined the behavior and effectiveness of florpyrauxifen-benzyl (FPB) and 2,4-D for EWM control, along with the influence of Bear Lake's unique water chemistry on EWM growth. Fifty 15 cm EWM shoots were planted in two separate greenhouse tanks, one filled with Bear Lake water and the other with tap water. Growth was evaluated for 3 months, measuring plant height, number of shoots per plant, and aboveground and belowground biomass. Degradation and behavior of herbicide were evaluated by applying FPB to ten 2 L tanks (five tanks containing Bear Lake and five containing tap water). Samples were collected at 0, 1.5, 3, 6, 12, 24, 48, and 72 hours after treatment (HAT), and herbicide concentrations were analyzed using HPLC. The efficacy of 2,4-D in controlling established EWM plants was investigated by applying 2 ppm of 2,4-D into two tanks containing thirty established EWM plants, with plants exposed for 24 and 48 hours and biomass recorded after 28 days. Results show that EWM shoots in Bear Lake water develop more vigorously than in tap water. This is demonstrated by higher shoot production in Bear Lake water plants, as well as post-planting height differences (>20 cm). FPB degradation in both Bear Lake and tap water followed similar trends, with concentrations decreasing as hours after application increased. EWM plants in tap water were more sensitive to 2,4-D and more effective control was achieved after 24 and 48 exposure times (ET), while effective EWM control was achieved in Bear Lake water only after 48 ET.

Presenter Biography:
Olanrewaju (Ola) is a Graduate Assistant in the Department of Plant, Soils, and Climate at Utah State University, pursuing a Ph.D. in Plant Science.

Title: Using Vegetation Communities to Compare Natural and Constructed Wetlands*

Presenter(s): Kennedi Davis
Affliation: University of Texas at Tyler

Abstract:
Wetland vegetation provides an abundance of ecosystem services such as water quality regulation, flood control, and it provides habitat space for fish, amphibians, and macroinvertebrates. Not only that, but these plants also act as excellent indicators of wetland conditions as dominant vegetation types are often used as biological criteria for classifying wetlands and other habitats (Cowardin & Golet, 1995). This project will assess the structure of vegetation communities to determine how they differ in constructed and natural wetlands. Five natural wetlands in the Red River drainage basin in northeastern Texas and northwestern Louisiana will be sampled to establish a baseline of vegetation communities. Additionally, 35 constructed wetlands in the same drainage basin will be sampled to draw a comparison between the structure and function of both wetland types. The purpose of this project is to create a national-scale ecological monitoring and assessment framework for wetland structure and function using vegetation. A Relevé plot method will be used to generate a species list to conduct a Floristic Quality Assessment Index (FQAI) for each site and a Vegetation Index of Biotic Integrity (VIBI) for each dominant plant community. Data from this project will help us determine if constructed and restored wetlands are functioning as their natural counterparts.

Title: Using herpetofauna to determine wetland health and function in the Red River watershed*

Presenter(s): Shelby Rodriguez-Edwards
Affliation: University of Texas at Tyler

Abstract:
Wetland restoration efforts have become more prevalent as the ecological processes and benefits of these systems are more understood. Ecological services provided by wetlands include flood attenuation, nutrient cycling, sediment stabilization, and improved water quality. Wetlands also provide unique habitats for both aquatic and terrestrial organisms. Reptiles and amphibians are commonly used as indicator species in wetlands due to their increased sensitivity to environmental conditions and fast responses to change due to their short generation cycles. Through the Agriculture Conservation Easement Program, ACEP, private landowners can help protect, restore, and enhance wetlands that have been affected by agricultural uses. This project will evaluate reptile and amphibian communities in reconstructed and natural wetlands within the Red River Basin of Northeastern Texas and Northwestern Louisiana. There will be five natural wetlands sampled to create a working baseline for wetland functionality. In addition, thirty reconstructed wetlands will be sampled over a two-year period, starting February 2024. Data will be collected through visual encounters and standard trapping protocols to understand herpetofauna species and abundance.

Presenter Biography:
Shelby Rodriguez-Edwards is a masters student at the University of Texas at Tyler Biology department. She completed her undergraduate degree at UT Tyler in Biology with two minors in entrepreneurship and forensic science.

Presenter Biography:
Kennedi Davis graduated from the University of Texas at Tyler with a Bachelor's of Science degree and decided to remain at the same institution to pursue a Master's in Biology as well. Currently, she is in the second year of the Master's program, focusing on my thesis, which aims to compare natural and constructed wetlands through surveying vegetation communities.

Title: Implications of Global Warming on Coastal Wetlands: Discussing the Success of *Phragmites australis* and Nitrogen Cycle Dynamics*

Presenter(s): Ava Miller & Chevy De La Serna
Affliation: Texas State University

Abstract:
As global temperatures rise, the nitrogen cycle is expected to accelerate, posing significant implications for wetland ecosystems. Wetlands play a critical role in nutrient retention and flood mitigation, yet coastal wetlands surrounding the Great Lakes are increasingly threatened by the invasive species *Phragmites australis*. While its invasion success has often been attributed to a competitive advantage in height for light access, this explanation does not fully account for the correlation between warming trends and P. australis proliferation. This study hypothesizes that rising annual temperatures may inadvertently enhance the growth of *P. australis* by accelerating the nitrogen cycle and increasing nutrient availability. Using the MONDRIAN individual-based computational model, we simulated the interactions of *P. australis* with various environmental factors, including nitrogen loading and temperature. We examined the effects of ten temperature treatments, increasing by 0.5°C from 11.5°C to 16°C, across three nitrogen loading levels (18, 24, and 32 g N $m^{-2}y^{-1}$). These treatments were evaluated in two plant community scenarios: a control group consisting of native species and an invasion scenario featuring *P. australis*. Our findings indicate that when nitrogen input remains below 24 g N $m^{-2}y^{-1}$, rising temperatures enhance the success of *P. australis*. However, when nitrogen input exceeds this threshold, *P. australis* flourishes irrespective of temperature variations. Notably, both nutrient availability and temperature were found to promote nitrogen uptake by wetland plants, ultimately contributing to nitrogen net retention within these ecosystems, particularly in *P. australis*. Without controlling the flow of nitrogen into Great Lakes wetlands, global climate change will enhance the cycling of nitrogen, thereby increasing the risk of invasion in coastal ecosystems. These insights are crucial for developing effective management strategies to mitigate the impact of *P. australis* invasions and protect the integrity of wetland ecosystems.

Presenter Biography:

Ava is a third-year undergraduate student at Texas State University pursuing a B.S. in Biology and Biochemistry. Her research focuses on the impact of warming climate conditions on the invasive wetland reed Phragmites australis, exploring the biogeochemical processes that facilitate its spread. Ava's broader research interests include examining how climate change and unsustainable practices influence the biochemical dynamics of ecosystems.

Title: Salt marsh plant functional trait variation as an indicator of drought resilience in the Nueces Delta, TX*

Presenter(s): Sophia McKelvey
Affliation: University of Texas at Austin

Abstract:
Texas' estuaries provide essential services for both people and wildlife but face increasing threats from drought intensification and sea level rise. The Nueces Delta (Corpus Christi, TX) is a semi-arid, low-flow estuarine wetland located at an ecotonal boundary between vegetated and unvegetated ecosystem states. To better understand marsh vegetation resilience to drought stress-induced state change, we examined the relationships between ecophysiological functional traits and environmental characteristics of two native species, *Borrichia frutescens* (a woody subshrub) and *Spartina alterniflora* (graminoid), from early spring to late summer, a period characterized by extreme drought-like conditions as predicted in future climate change scenarios. During each season, we measured overall plant biomass, size of individual leaves and roots, and tissue stoichiometry along with soil salinity, moisture, and nutrients within patches of each species at two sites in the Nueces Delta. Our data suggests that *Borrichia* and *Spartina* have distinct functional trait differences. Most notably, *Borrichia* displayed higher leaf and root carbon-to-nitrogen ratios (C:N) than *Spartina*, while *Spartina* exhibited a higher root-to-shoot ratio than *Borrichia*. In summer, we found increased C:N in both species, indicating that hotter, drier conditions may contribute to nutrient limitation and decreased photosynthetic efficiency. Furthermore, *Spartina* showed significant shifts in root-to-shoot values and C:N ratios between spring and summer, while *Borrichia* appeared to be more stable, indicating *Spartina* is less resilient to drought stress. Such differences in plant traits may help explain the variability in wetland restoration efforts, especially in stressed environments. The results of this study provide an important baseline for understanding wetland vegetation functional diversity and demonstrates how trait-based restoration practices may allow ecologists to make better informed decisions under the increasingly harsh conditions associated with regional climatic warming.

Presenter Biography:
Sophia McKelvey is a senior at The University of Texas at Austin, pursuing a Bachelor's degree in Environmental Science with a Certificate in Marine Science. Her research focuses on the ecological significance of physiological traits in plants, with a particular interest in understanding how these traits influence the resilience of estuarine species in light of climate change. Sophia is currently working on her capstone project analyzing estuarine vegetation and environmental data that was collected in the spring and summer, as well as writing a final report from this project. She aims to apply her research skills to environmental policy work and continue marine ecology research in graduate school.

Title: The Effects of Nutrient Loading and Mowing on the Growth and Reproduction of Invasive Sedge *Cyperus entrerianus**

Presenter(s): Sabrina Sanders
Affliation: Texas State University

Abstract:
Wetlands are one of the most important and valuable ecosystems on Earth, providing crucial ecosystem services such as nutrient cycling, carbon sequestration, flood mitigation, water filtration, and biodiversity enhancement. However, wetlands have a long history of destruction throughout the world. They are particularly vulnerable to threats such as invasive species and nutrient loading because they act as landscape sinks for plant propagules, nutrients, water runoff, and sediments. *Cyperus entrerianus*, commonly known as deeprooted sedge, is a species of flatsedge native to South America that has become a rapidly spreading invasive species across the southeastern United States. Once established, *C. entrerianus* displaces native species and forms dense monocultures through rhizome production, fragmentation, and prolific seed production. A greenhouse experiment

was designed to compare and contrast the biomass, seed, rhizome, and tiller production of *C. entrerianus* grown under different nutrient loading and mowing regimes. The experiment had a factorial design with two main factors: nutrient input (4 levels; a control with no fertilizer added, 4g N m-2 year-1, 8g N m-2 year-1, 12g N m-2 year-1), and cutting treatment (3 levels; a control with no cutting, cutting at 6.35cm, and cutting at 12.7cm). Preliminary results suggest a positive correlation of biomass production, tiller production, and seed production with higher rates of nutrient loading. In addition, mowing treatments may discourage seed production in low-nutrient environments. These results will give managers a better understanding of the biological and ecological traits of *C. entrerianus*, thus allowing the implementation of more effective management strategies.

Presenter Biography:
Sabrina is a wildlife ecology MS student at Texas State University. As part of her research, she is using the simulation model Mondrian to study the effects of mowing as a management strategy to mitigate nutrient release from coastal wetlands in the Great Lakes Region after a high-water event. In addition, she is studying the biological and ecological characteristics of an invasive sedge species (*Cyperus entrerianus*) and how it responds to nutrient loading and mowing.

Title: Effects of Humic Acid on Harmful Algal Bloom Management and Nutrient Binding*
Presenter(s): Brittany Chesser
Affliation: Texas A&M University

Abstract:
Harmful algal blooms (HABs) resulting in fish, livestock, and companion animal deaths, losses in agriculture production and irrigation waters, and interference with domestic drinking water supplies, are being reported with increased frequency. This may be partly due to increased awareness and identification of HABs, but also likely due to environmental changes. High heat and drought conditions experienced across large regions of the southern United States in recent years have exacerbated HAB issues by concentrating nutrients during periods when water availability is greatly diminished for flushing. Harmful algal blooms caused by many species of algae thrive in these hot, nutrient rich, stagnant conditions.

Traditionally, HAB management has revolved around nutrient management, flushing, treating with algaecides, and toxin oxidation. Nutrient management is expensive and difficult when applied to larger bodies of water. Flushing is nearly impossible, at least at the necessary quantities, under drought conditions. Algaecides may resolve the issue if the problem can be caught and diagnosed before the HABs begin to produce significant amounts of toxins, but timing is difficult, and this is an expensive but temporary fix as blooms may occur again within weeks of an algal treatment. Oxidizing toxins using potassium permanganate is expensive and can be dangerous to aquatic organisms.

Humic acid may be a low-cost solution for HAB management. Humic acid can be used prophylactically to prevent blooms, may disrupt algal cell biology, and it may act as a nutrient binder. Its most promising use is as a low-cost prophylactic treatment by providing a carbon source for naturally occurring bacteria in the pond to cycle nutrients and prevent harmful algal blooms from occurring in the first place. Join us as we discuss the results of humic acid use as a treatment, prophylactic preventative, and nutrient binder when used during *Prymnesium parvum* and *Microcystis aeruginosa* blooms.

Presenter Biography:
Brittany Chesser joined the Department of Rangeland, Wildlife and Fisheries Management as an aquatic vegetation management program specialist in May 2019. Chesser's primary duties include the development, implementation and evaluation of programs, services, products and processes related to aquatic vegetation management. She also performs routine water quality analyses and other diagnostics, produces client reports and recommends amendments in her role as lead diagnostic scientist with the Aquatic Diagnostics Laboratory. Her work with the Aquatic Diagnostics Laboratory has generated an economic impact of more than $5.5 million. In 2022 she was recognized with a Superior Service Award from Texas A&M AgriLife Extension.

Chesser is also pursuing a doctoral degree in rangeland, wildlife and fisheries management under the direction of Todd Sink, Ph.D. Her expected graduation date is Spring 2026.

Title: Natural Organic Microsponge™ Technology Improving Vegetation, Algae and Aquatic Weed Control
Presenter(s): Dr. Lucia Marshall
Affliation: Biosorb Inc.

Abstract:
One of the major problems in applying crop protection agents is making treatments stick to their target species. Nearly 95% of applied materials end up wasted due to runoff and dilution. In crop markets, we have seen the effects of runoff with the appearance of resistance to herbicides, fungicides and insecticides, and farmers are not getting adequate control with their application treatments.

Biosorb®'s Microsponge™ system was created to mimic pharmaceutical formulations that provided targeting to tissue and controlled-release of treatments. In the agriculture and horticulture markets of the 70's and 80's, controlled-release systems were not even considered. The majority of formulations were made up of active ingredient(s), solvent(s) and surfactant(s). Sprays were applied generously, without thinking of rain events, runoff, drift, and adverse impacts to non-target species.

Our group developed the first type of microsponge system in 1998, using residual grain materials. These microsponges, called Biocar® for biological carrier, absorbed active ingredients in tank mixes and made them stick. The first products were microbial biopesticides for mosquito control (bioinsecticide) and for hydrilla control (bioherbicide). The US Army Corps of Engineers sponsored our work on the bioherbicide for hydrilla, which we called HydraClear®.

As the technology evolved, several wholesale nurseries in South Florida began using the "organic certified" microsponge adjuvant, called TopFilm™. The object was to reduce the runoff of applied foliar treatments of fertilizers, insecticides, and fungicides on ornamental plants. When the microsponge adjuvant, TopFilm™, was added to their tank mixes, the growers noted that instead of applying fungicide and insecticide every 10 days in the greenhouse, they could apply treatments every 21 days by using this sustained-release technology. The growers began saving 30% in cost of chemicals, labor, fuel and also reducing worker exposure.

Same principle, making herbicides and algaecides stick with TopFilm™, help minimize drift, dilution, and wash-off providing more sustained-release and translocation for better control. Aquatic applicators can apply treatments knowing that if morning dew or rain-events occur, the treatment will stay on the vegetation, thereby reducing the number of sprays.

For more information: www.Biosorb-Inc.com, YouTube.com/@biosorb, Biosorb_Products on Instagram.

Presenter Biography:
Dr. Marshall is a research biochemist specializing in formulation development of pharmaceutical and crop protection products. She received her Ph.D. in Biochemistry at Rice University and her B.A. at Rollins College. After her academic and corporate careers at University of Texas, Houston; University of Pennsylvania; and at Monsanto, she established a formulation laboratory with production facilities in Saint Charles, Missouri. By working on natural and biological products, she invented and patented the grain-based Biocar® microsponge carrier technology which has been in international and USA markets for over 20 years. Biosorb Inc. provides new organic-certified products for adherence and sustained-release of crop protection ingredients. Today, Biosorb® Products: TopFilm™, FertiGlu®, and TopFilm-F™ are purchased by major wholesale nurseries, aquatic districts, potable water reservoirs, mosquito control agencies, organic crop producers, and golf courses. Biosorb® Products are made from Midwestern grain materials and help reduce runoff and waste of pesticides into our waterways and environment. www.Biosorb-Inc.com

Title: Updates from AquaExtension: Aquatic Vegetation Outreach
Presenter(s): Brittany Chesser

Affliation: Texas A&M AgriLife Extension Service

Abstract:
Outreach involving our natural resources is constantly changing to keep up science, stakeholder perceptions, land uses, etc. The Texas A&M Extension Service continues to play a pivotal role in disseminating research-based knowledge and solutions to address challenges faced by communities, landowners, and individuals across the state. This presentation will showcase the latest updates and initiatives focused on aquatic vegetation management, with the goal of empowering stakeholders with the knowledge and tools needed to manage aquatic vegetation effectively.

Presenter Biography:
Brittany Chesser is the Aquatic Vegetation Management Program Specialist for Texas A&M Agrilife Extension Service. Being a Delaware native, Brittany graduated from Delaware State University with her B.S. in Natural Resources. She later received her M.S. at Mississippi State University working on baitfish. Currently in her role at TAMU, she provides technical expertise on aquatic vegetation management to the general public through identifying specific plant species, recommending correct management practices, and delivering presentations; along with serving as the Lab Specialist for the TAMU Aquatics Diagnostic Laboratory. She has served as President for the Texas Aquatic Plant Management Society and serves on the Board of Directors for the Aquatic Plant Management Society. She has recently started working towards her doctorate at Texas A&M University.

Title: Managing Aquatic Life and Vegetation at Cassin Lake: Preparing for San Antonio's Future Community Fishing Lake
Presenter(s): Mitch Magruder
Affliation: San Antonio River Authority

Abstract:
The San Antonio River Authority and Texas A&M University – San Antonio have acquired a 37-acre lake, that will soon be designated as a community fishing lake by the Texas Parks and Wildlife Department. Our management strategy will focus on enhancing recreational opportunities while preserving ecological integrity. Preliminary surveys suggest that a highly prolific submerged plant, Coontail (*Ceratophyllum demersum*), negatively impacts fish condition and recreational access. We will explore strategies to remove and replace Coontail with more beneficial aquatic vegetation to improve fish populations and lake accessibility. Ongoing monitoring and research will support adaptive management, enabling a range of activities such as fishing, kayaking, swimming, and wildlife viewing, while promoting community engagement and ecological health amidst increasing human activity.

Presenter Biography:
Mitch Magruder is an Aquatic Biologist with the San Antonio River Authority. He holds a Bachelor's degree in Wildlife and Fisheries Sciences from Texas A&M University and Master's in Applied Ecology from the University of Nebraska-Lincoln.

Title: The Formative Years of TAPMS
Presenter(s): Joyce Johnson and Malcolm Johnson

Abstract:
An informal discussion led by two Charter Members will explore the origins of the Texas Aquatic Plant Management Society (TAPMS). Originally established in 1986 as a special interest group focused on controlling the invasive Hydrilla, TAPMS has since grown into a recognized organization addressing a wide range of aquatic plant management challenges across Texas.

Presenter Biographies:
Malcolm Johnson is an aquatic biologist involved in aquatic systems in Texas for over 40 years. Joyce Johnson is a biologist formerly with Texas Parks and Wildlife as the Aquatic Habitat Director.

Title: Purposeful Planting: Selecting Aquatic Plants for Your Pond and Lake Goals

Presenter(s): Haley Kokel
Affliation: Fish On Aquatic Plants

Abstract:
Native aquatic plants are essential to the health and stability of pond and lake ecosystems, offering benefits such as improved water quality, habitat, shoreline stabilization, and aesthetic enhancement. However, effective planting requires understanding that each waterbody and client has unique objectives influencing plant selection. This presentation highlights examples of goal-based planting plans to support ecosystem health and reach client goals.

Presenter Biography:
Haley Kokel owns and operates Fish on Aquatic Plants, a native aquatic plant nursery in College Station, Texas. Haley earned her Master's degree from Texas A&M University through research on native aquatic vegetation establishment. Prior to opening her nursery, Haley worked for Texas Parks and Wildlife and Missouri Department of Conservation where she implemented plant propagation and planting techniques for vegetation restoration in state lakes. Haley rejoined TAPMS in 2019 after moving back to Texas and has been on the Board of Directors since 2021. Haley enjoys fishing, leatherworking, gardening, hunting, and spending time with her family.