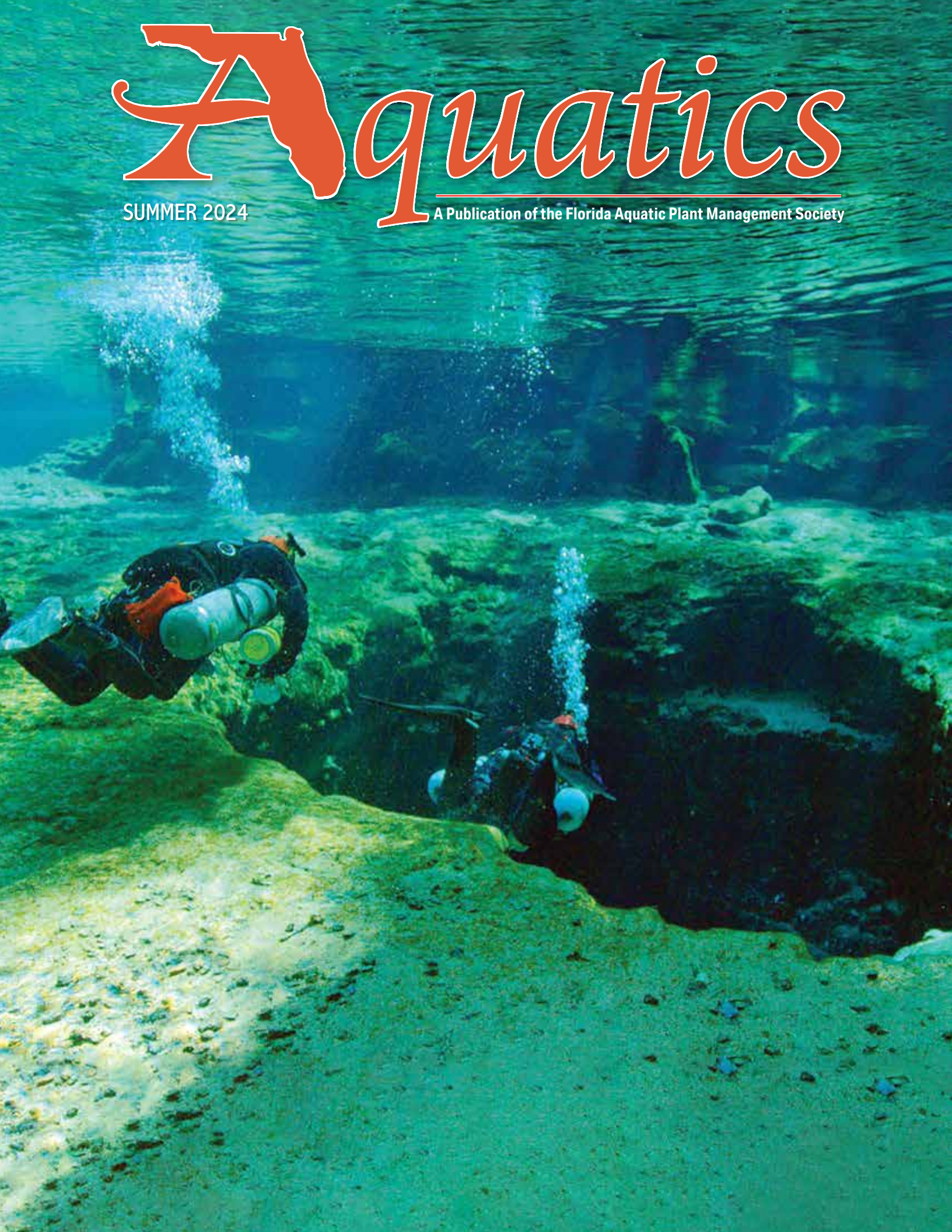


# Aquatics

SUMMER 2024

A Publication of the Florida Aquatic Plant Management Society



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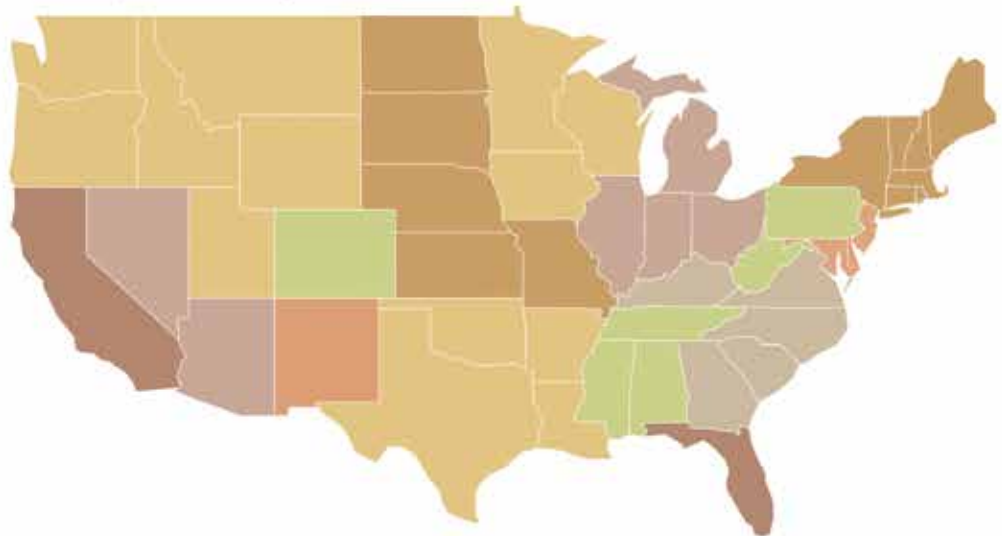
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# Aquatics

SUMMER 2024

Volume 46, Number 2



Cave divers enter the Ginnie Springs Cave System. Courtesy Tom Fitz of Schoolyard Films

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## Letter from the Editor



Shelby Thomas

Dear Aquatics Readers,

Welcome to the Summer 2024 issue of Aquatics Magazine! As the warmest months of the year set in, we are excited to bring you a collection of articles that delve into various aspects of aquatic plant management, offering both insightful information and practical advice.

In this issue, we address some of the most frequently asked questions in “Aquatic Plant Management: Common Questions,” providing clear answers and tips for professionals and enthusiasts alike. For those looking to integrate technology into their fieldwork, “Back to School Again and Taking Cool Field Trips” explores the innovative use of drones by various agencies, highlighting how these advancements are revolutionizing our approach to aquatic plant management.

Our feature article, “Exploring Florida’s Springs: Guardians of Hidden Ecosystems and Freshwater Treasures,” takes you on a journey through the unique and fragile ecosystems of Florida’s springs. Discover the intricate connections between these natural wonders and the larger environmental health of our planet.

The “Midwest Aquatic Plant Management Society Update” offers a comprehensive look at the latest developments and research initiatives from this dedicated community. Meanwhile, “Naturally Native” focuses on the characteristics of Lotus plant species.

As the summer heat intensifies, “Staying Cool: Heat Safety Strategies for Aquatic Plant Management Professionals” provides essential tips and strategies to help you stay safe and healthy while working in challenging conditions.

In “Survey Says,” we present the latest findings from our recent survey, shedding light on trends, challenges, and successes in the field of aquatic plant management. Lastly, “A Look at the Working in the Weeds Podcast Listeners” offers a glimpse into the audience of our popular podcast, revealing their interests and feedback.

We hope you find this issue both informative and inspiring. Thank you again for the opportunity to serve as your Editor. I look forward to bringing you the latest information and features from our industry. Interested in being featured or writing for Aquatics, email Shelby Thomas at [aquaticsmagazine@gmail.com](mailto:aquaticsmagazine@gmail.com).

# "BACK TO SCHOOL AGAIN and TAKING COOL FIELD TRIPS"



This past month Lee County Hyacinth Control District hosted a few on-site “field trips” of our facility here in Lehigh Acres, Florida. With some correspondences and coordination, we were able to plan and schedule 2-day visits with the aquatic weed managers of Pasco County and St. John’s Water Management District.

What started as a phone conversation and a few questions, turned into a trip for Brett Hicks of Pasco County to come down and see our operation. They were especially interested in our invert system.

We had recently put together a brand-new truck and invert system from scratch, and this was a perfect chance to test it out. We did a few equipment demonstrations and got to pick each other’s brains on chemical use rates and effectiveness against specific plant species. As you can see from the pictures, it was a huge success, and we are already planning our field trip to see their equipment.



Another opportunity presented itself when Peter Henn of the St. John’s Water Management District reach out and was interested in starting their own drone

program. After discussion on what we were doing down here, we decided it was best for them to come see it in person. Peter and his staff were familiar with drone

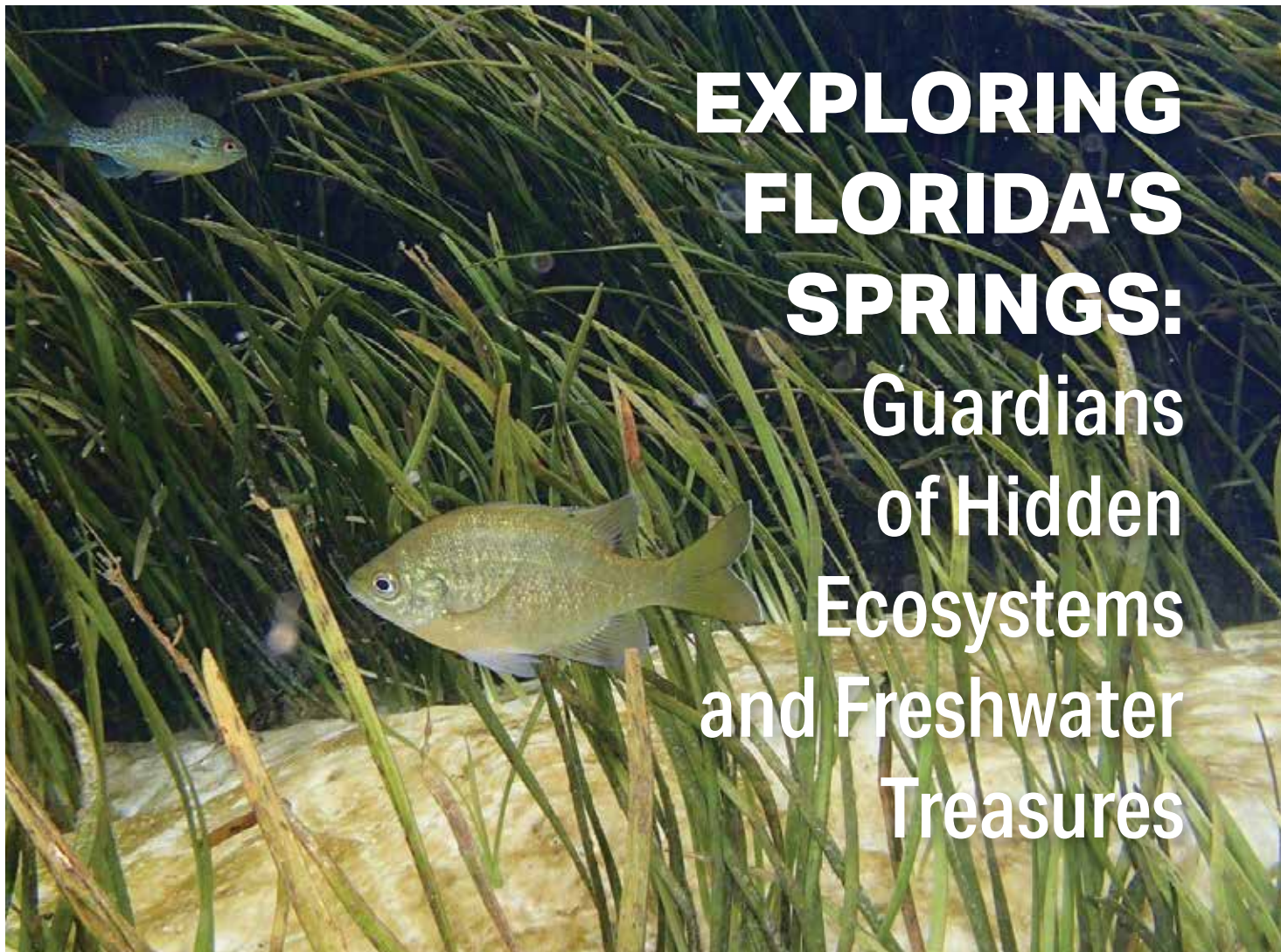


treatments since they had been contracting out their needs for some time. However, they were very interested in starting their own program to save time and costs.

Again, we had a beneficial meeting amongst his staff and mine. We performed a drone treatment in a nearby marsh and showed them the ease and quickness of an aerial application via drone. Within just a few hours of drone discussion back at the office, they had all they needed to get their drone program flying off the ground.

These “field trips” offer collaboration efforts on what works well for us and for them. Our regional areas are different in comparison, but aquatic plant control methods can still be applied regardless. Sometimes it’s difficult to make big changes after hearing a presentation or a quick conversation between session breaks at a conference. However, if we can take the extra time to absorb the details of a specific new method, then I believe that is where change happens. It’s always good to learn from others through their own experiences in managing aquatic plant control. We felt this was a great advantage for both programs to highlight and share professional development techniques and gain knowledgeable experience from one another.





# EXPLORING FLORIDA'S SPRINGS: Guardians of Hidden Ecosystems and Freshwater Treasures

Fish taking refuge in native aquatic plants in Rainbow River

Since ancient times, springs have captivated our attention and left us wondering about these beautiful and intriguing labyrinths that lie in the world beneath our feet. Florida's 1000+ springs represent unique and fragile ecosystems cherished for their natural beauty and ecological significance. Over 25 million people depend on this groundwater as their source of drinking water. Springs offer numerous recreational opportunities – like swimming, snorkeling, kayaking, canoeing, and diving – and they *also* provide a unique chance to look at how life is transformed as water moves from below ground to the surface.

Much of Florida sits atop a huge underground reservoir of groundwater known as the Floridan aquifer. Water that falls as rain filters through the ground and eventually emerges naturally as spring water from the aquifer via porous bedrock that is called



Diverse and colorful SAV in Rainbow River



Riparian grasses rim the edge of the Rainbow River Run



Cave crayfish emerged from the mouth of the cave under high flow. Species unknown. Courtesy the Cambrian Foundation

to move about the aquifer between the limestone underground and the surface of the earth.

Fed by the aquifer, springs emerge from underground caverns, releasing crystal-clear waters into the surface of the spring and eventually forming a spring run in places where discharged water travels over land. Surrounding wetlands and forests thrive in the presence of these springs, creating a rich tapestry of biodiversity. Cypress swamps, wetlands, lakes, rivers, marshes, hammocks, etc. can all arise from the clear spring waters and host an array of plant and animal species.

Springs and underwater caves are incredibly unique habitats though. Deep underground, subterranean caves form where the unsaturated zone (vadose) meets the saturated zone (phreatic) of the



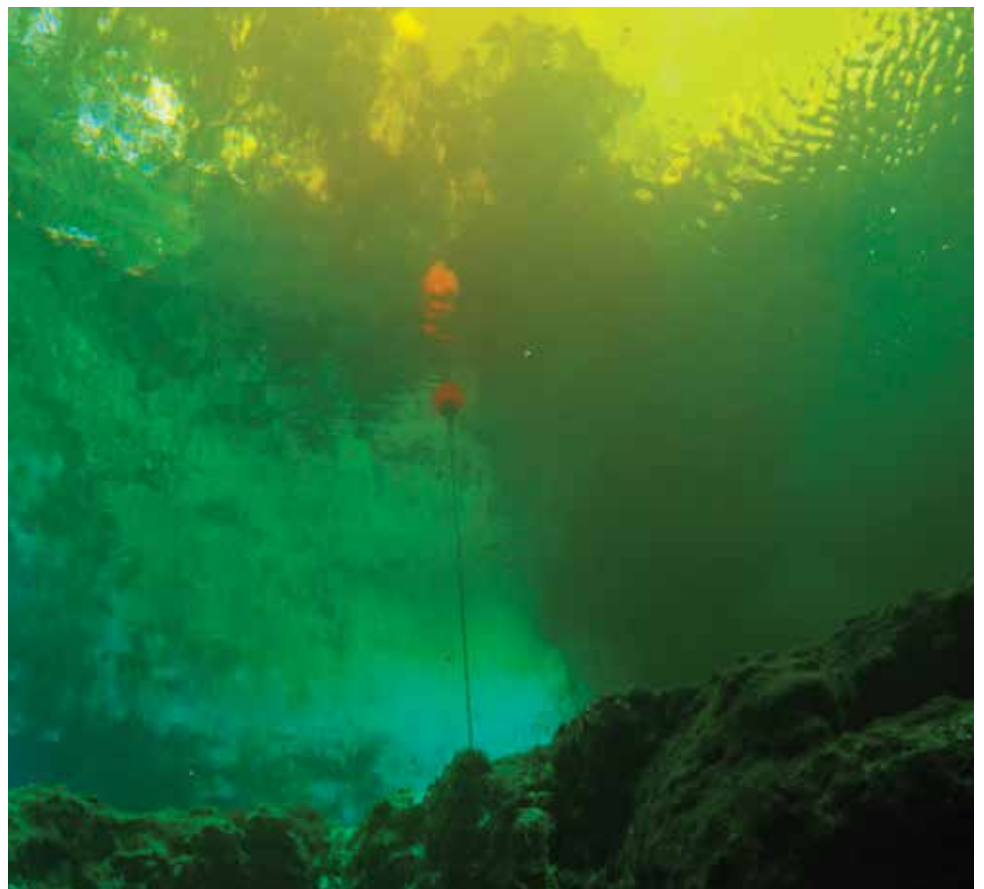


**Cave divers enter the Ginnie Springs Cave System. Courtesy Tom Fitz of Schoolyard Films**

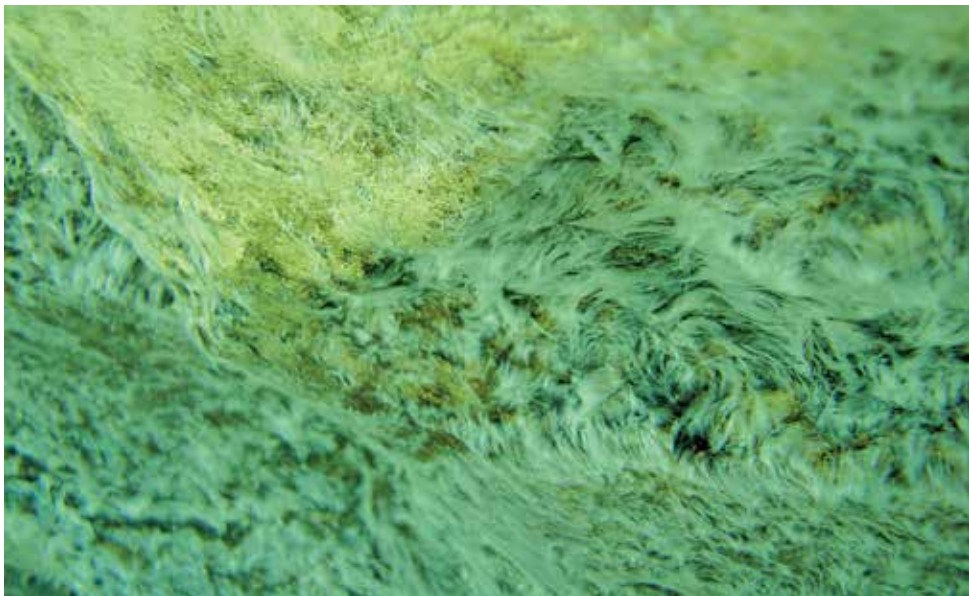
water table. Fluctuating water levels allow dissolution of limestone to occur at various depths and in various shapes, creating caves, carving channels, cracks, etc. Water in the aquifer and in caves is devoid of oxygen...there is none diffusing in from the atmosphere, and in the absence of sunlight, there are no plants to produce oxygen via



**Cave diver prepares to collect chemolithoautotrophic bacteria from DeLeon Springs cave under research permit. Courtesy of the Cambrian Foundation**



**Tannic water from the Santa Fe River meets the clear spring water from Ginnie Springs. Courtesy of Tom Fitz of Schoolyard Films**



Groundwater bacteria coating the inside of Wekiwa Springs cave system. Courtesy of the Cambrian Foundation



Rose Sink at Ichetucknee Springs covered in duckweed



Silver Glen Spring vent

photosynthesis. But...these systems do support life. A unique suite of microorganisms known as chemolithoautotrophic bacteria utilize chemicals in the bedrock to “make their own food” and serve as the producers in this subterranean food web. These bacteria are eaten by other cave organisms – like cave crayfish, cave shrimp, isopods, amphipods, etc. – who spend their entire life underground and in the dark, and they play an important role (we think) in shaping geology underground.

Underground caves and springs maintain a consistent temperature and flow, offering stable conditions for the water within them. While water chemistry varies from one spring to another, the specific chemical and physical elements within a single spring usually remain steady over time, and some species are endemic to only one cave system.

As water emerges at the spring vent, the ecosystem begins a distinct transformation to support plants and other wildlife on the earth’s surface. Depending on the shape of the basin and the forest canopy above, once the spring water interacts with sunlight, aquatic plants and algae establish and begin providing oxygen, food, and habitat for fish and macroinvertebrates. The species, diversity, and abundance of aquatic plants depends largely on water chemistry, water flow, quality of substrate/hydrosoil, presence of tannins, amount of sunlight, shape of the basin/run, etc.

Occasionally water is confined to a closed basin around the emerging groundwater. These ‘sinks’ are sometimes directly connected to subterranean cave systems beneath, and water here is often cool and alkaline. The water level in wet sinks is the same as the top of the water table, so wet sinks are not impacted by precipitation and droughts (except for significant long-term events). Floating plants are common here, and depending on the level of sunlight penetration, some submerged macrophytes may establish in the shallows.

When spring water flows from the basin out over an eroded channel, a ‘spring run’ forms. These can remain small in size or eventually connect to other braided channels, wetlands, and river systems. Lush

meadows of vegetation, like tapegrass and eelgrass, sway in the flowing water and offer a refuge for juvenile fish and turtles, a food source for wildlife, and an important anchor for sediments. Fallen trees along the way create habitat for animals and for aquatic plants and algae. Spring runs sometimes feature bedding planes of exposed limestone outcrops that add to habitat quality and diversity. Riparian plants line the banks of the spring runs that provide transitional habitat for wildlife that prefer this zone.

On its journey from the spring vent, spring water may encounter tannic water in many parts of Florida. Tannins are the tea-colored pigments that form from the decomposition of leaves, vegetation, and soils. Tannins can affect what species of aquatic plants grow in rivers and spring runs because although tannic water is transparent, it is also somewhat acidic. Certain species of aquatic plants prefer waters with a particular pH.

Florida's unique geology not only contributes to diverse ecosystems and wildlife, but it also means Florida's springs face numerous threats. Porous limestone and groundwater that travels many miles underground means that impacts to the springs can happen far from the spring itself. Human activities, including groundwater depletion from pumping, pollution from stormwater and agricultural runoff, saltwater intrusion, and invasive species pose significant challenges to the health of these beautiful systems. Declines in water quality, reduced spring flow, and alterations to natural habitats jeopardize the survival of native species and diminish the ecological integrity of these natural resources.

Efforts to conserve and protect Florida's springs are underway, driven by their ecological importance, cultural significance, and recreational worth. Concerted conservation efforts and sustainable management practices are necessary to safeguard the ecological health and resilience of the springs, ensuring the continued vitality for generations to come. And it is our job to make sure that Florida's springs remain healthy to sustain the abundance and diversity of native aquatic plants that support fish, birds, and other wildlife that call our spring runs home.

### To learn more:

*Clear Water, Clean Water?  
Exploring the Floridan Aquifer.*  
<https://vimeo.com/271610616>

*Amy L. Giannotti, MS, CLM, (amy@aquastemconsulting.com) is an environmental scientist, Certified Lake Manager, and founder of AquaSTEM Consulting. Amy has 25+ years of experience working in temperate and subtropical marine and freshwater systems,*

*including airboat operations for lake and aquatic plant management in Florida. She is an airboat pilot, outboard motor operator, certified diver, and a licensed aquatics herbicide applicator. Amy also serves as the Director of Development for Schoolyard Films – a 501c3 non-profit organization founded in 2008. Schoolyard Films brings the planet's most remote locations into schools and classrooms via high-end environmental documentaries for youth. Raising awareness through expert filmmaking provides a bridge for connecting humans to nature.*

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## NATURALLY NATIVE:

UAS view of Lotus pads growing and expanding on Fish Lake.

Submitted by

**Kelli Gladding,**

*Biological Scientist with the University of Florida, IFAS, Center for Aquatic and Invasive Plants.*

In Florida, we have two Lotus species; *Nelumbo lutea*, common name known as American Lotus or Yellow Lotus and *Nelumbo nucifera*, known as the Sacred Lotus. Only the American Lotus is native to Florida and North America as far north as Canada and the eastern United States through to Texas. It is typically found in freshwater bodies such as lakes, ponds, marshes and slow streams. It is known for its large, fragrant yellow to white flowers and distinctive large circular leaves.

The non-native, Sacred Lotus has been vouchered in 4 counties throughout Florida and has escaped ornamental cultivation

throughout the Southeastern US. Even though it is non-native, it has not been deemed as invasive (yet). Where the Sacred Lotus has been observed, it grows in extremely dense mats and can outcompete several of our native aquatic plants. It is recommended to manage the non-native Sacred Lotus to prevent its spread and establishment.

The Sacred Lotus can easily be differentiated from the American Lotus by the flowers — Sacred Lotus can vary from pink, red and even purple where our native is most commonly yellow. The Sacred Lotus is native to India, China and Southeast Asia and is has been cultivated in these regions for thousands of years and revered for its beauty, cultural symbolism and various practical uses.

Similarly, here in north America, the native Americans historically utilized

various parts of the lotus plant for a variety of purposes.

### Food Source:

The seeds of the lotus were particularly valued for their nutritional content. They are edible when raw or cooked and were a significant food source, providing both sustenance and nutrients.

**Medicinal Purposes:** Various parts of the plant, including the seeds, roots and leaves, were used in traditional herbal remedies for treating ailments such as diarrhea, dysentery, fever and other illnesses.

### Spiritual and Ceremonial Significance:

The lotus plant held spiritual significance for the tribes and would sometimes be incorporated into rituals, ceremonies and

religious practices as symbols of purity, renewal and spiritual awakening.

**Crafts and Tools:** The fibrous stems and leaves were woven into baskets, mats and other useful items. Back then and even today, the dried seed pods were used for decorative elements in crafts and are available for purchase online.

Today, you may find paintings and symbols of the Lotus flower associated with yoga and other practices. Due to its spiritual traditions and symbolism of purity and enlightenment; it is viewed as “growth from mud”. As the lotus flower grows in the muddy soils, it emerges above the depths clean and pure. So, this growth pattern is thought to symbolize the journey of the soul, which can rise above challenges and impurities of the material world to attain a spiritual liberation.

A few quick facts about the growth habits of the American lotus as it has been around for thousands of years. It is an herbaceous, perennial aquatic plant that persists from

rhizomes in the soil or new growth from the seed pods. It can grow above the water 1-6 feet tall with leaves that are up to 40 inches or 1 meter wide and is simple and round with a rippling margin. The large yellow flowers are produced during the summer months with a sweet scent. The seeds are borne in pods that resemble a showerhead. The plant dies back or goes dormant during the fall and winter months. Another interesting fact about the seed pods is their longevity to remain dormant. They have been documented and found in archaeological findings from several centuries back where they were stored under dry conditions and were successfully germinated.

While the American Lotus is a native aquatic plant, under the right growing conditions, it is fast growing and can expand from a modest few leaves, to over an acre in size within one growing season. So, from a manager’s perspective, this native has the ability to become “too much of a good thing” very quickly and has been known to

block access and navigation in some areas.

I personally find the flowers of the lotus to be of exceptional beauty and I enjoy the sweet fragrance it provides during the summer months. However, during the fall, driving an airboat through the vast fields of seedheads creates a huge mess to clean up in the bottom of the boat. Even though it’s native, it’s not always a “good thing” to introduce a new plant to a new waterbody, so keep your equipment clean from all vegetation as a good preventative practice.

*Kelli is a biological scientist with UF/ IFAS CAIP for four years and has been involved with aquatic plant management efforts in Florida for twenty years. She is a past president of FAPMS and is currently the Secretary/ Treasurer for FAPMS Scholarship & Research Foundation. [k.gladding@ufl.edu](mailto:k.gladding@ufl.edu)*

*Please submit your favorite native plant column to Kelli and to spotlight your regional chapter.*

*For additional information; please visit the Center for Aquatic and Invasive Plants website:*

**| Center for Aquatic and Invasive Plants | University of Florida, IFAS ([ufl.edu](http://ufl.edu))**

*Along with the UF IFAS EDIS document written by Dr. Lyn Gettys: [SS-AGR-375/AG380: American Lotus, Yellow Lotus: \*Nelumbo lutea\*](#) ([ufl.edu](http://ufl.edu))*



***Nelumbo lutea*, Fish Lake, Osceola County**

# Aquatic Plant Management: Common Questions

**Christine Krebs, Cayla Romano, and Dr. Jay Ferrell**

*UF/IFAS Center for Aquatic and Invasive Plants*

Have stakeholders asked you questions in the field? Are those questions related to herbicide use in our waterways? The UF/IFAS Center for Aquatic and Invasive Plants (CAIP) has a new resource for you! The “*Aquatic Plant Management Common Questions*” one-pager is available digitally or for download to print on our website.

These common questions were shared by FWC biologists who are frequently approached by curious stakeholders on the boat ramp or out on the water. This one-pager was created for plant management professionals who are looking for a resource to hand out when approached with these common questions.

If you have any additional questions that you’d like to see answered, please email us at [caip@ifas.ufl.edu](mailto:caip@ifas.ufl.edu).




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# AQUATIC PLANT MANAGEMENT COMMON QUESTIONS

## **Will these herbicides harm migratory birds and bees? How do herbicides affect fish/other aquatic life?**

The Environmental Protection Agency (EPA) explains that when a registered herbicide is used according to the label directions, it will cause no unreasonable adverse effects on human health or the environment. All pesticides undergo years of testing, review, and evaluation by the EPA before they can be used. One of the specific criteria for review is “effects to non-target organisms”. Birds, mammals, fish, and invertebrates are all considered “non-target organisms”. Since herbicides are only used to manage plants, tests have shown minimal impacts on these non-target organisms.

## **Do herbicides harm fish or affect water quality?**

When using aquatic herbicides according to the label, they do not harm fish. The impact of aquatic herbicides on fish and water quality can vary depending on the specific herbicide used, its concentration, the application method, and the environmental conditions of the water body.

Fish kills can sometimes be seen after an application, usually under warm conditions, when there is less oxygen in the water and the target plants decay rapidly. This situation can remove all remaining oxygen and lead to fish suffocation. Therefore, treating large infestations in mid-summer is not advised.

A proactive management strategy never allows invasive plants to reach high numbers. Managing fewer plants over time will reduce nutrient release and prevent shocking the aquatic ecosystem with drastic changes often associated with reactive management strategies.

## **Do herbicides cause sores on fish?**

When used according to the label, herbicides have not been shown to cause fish sores. Fish sores can have many causes, but usually result from stress or an infection.

## **Are the fish safe to eat after treatment? How long do we wait to eat them?**

Almost all aquatic herbicide labels list fishing and swimming restrictions as zero days after application, when used according to the label. Therefore, fishing (and consumption of those fish) can usually occur immediately after the application. It is important to check the herbicide label or contact your local management agency to be sure.

## **Will these chemicals harm my family or pets?**

There is little likelihood of adverse effects from normal water usage after herbicide application. All herbicides undergo years of testing, review, and evaluation by the EPA before they can be used. One of the specific criteria for review is “effects to human and animal exposure.” Almost all aquatic herbicide labels list water consumption restrictions as zero days after application, but some have restrictions of one day. It is important to check the herbicide label or contact your local management agency to be sure.

## **What is the difference between the SDS and herbicide label since they sometimes seem to conflict?**

Safety Data Sheets (SDS) (formally MSDS or Material Safety Data Sheets) and herbicide product labels serve different purposes, but both are essential for the safe handling and use of herbicides and other chemicals. SDS are developed by the Occupational Safety and Health Administration (OSHA) and the primary purpose of an SDS is to provide detailed information about the properties, hazards, and safe handling of a chemical product. SDS are not intended for the public, but rather for warehouse managers and those that transport these chemicals. On the other hand, labels are intended to inform herbicide users/handlers that are involved in plant management. This information is specifically designed to provide direction on the proper and legal use of the herbicide. The key distinction is that SDS sheets are designed to protect workers in an industrial environment while labels are designed to protect the natural environment.

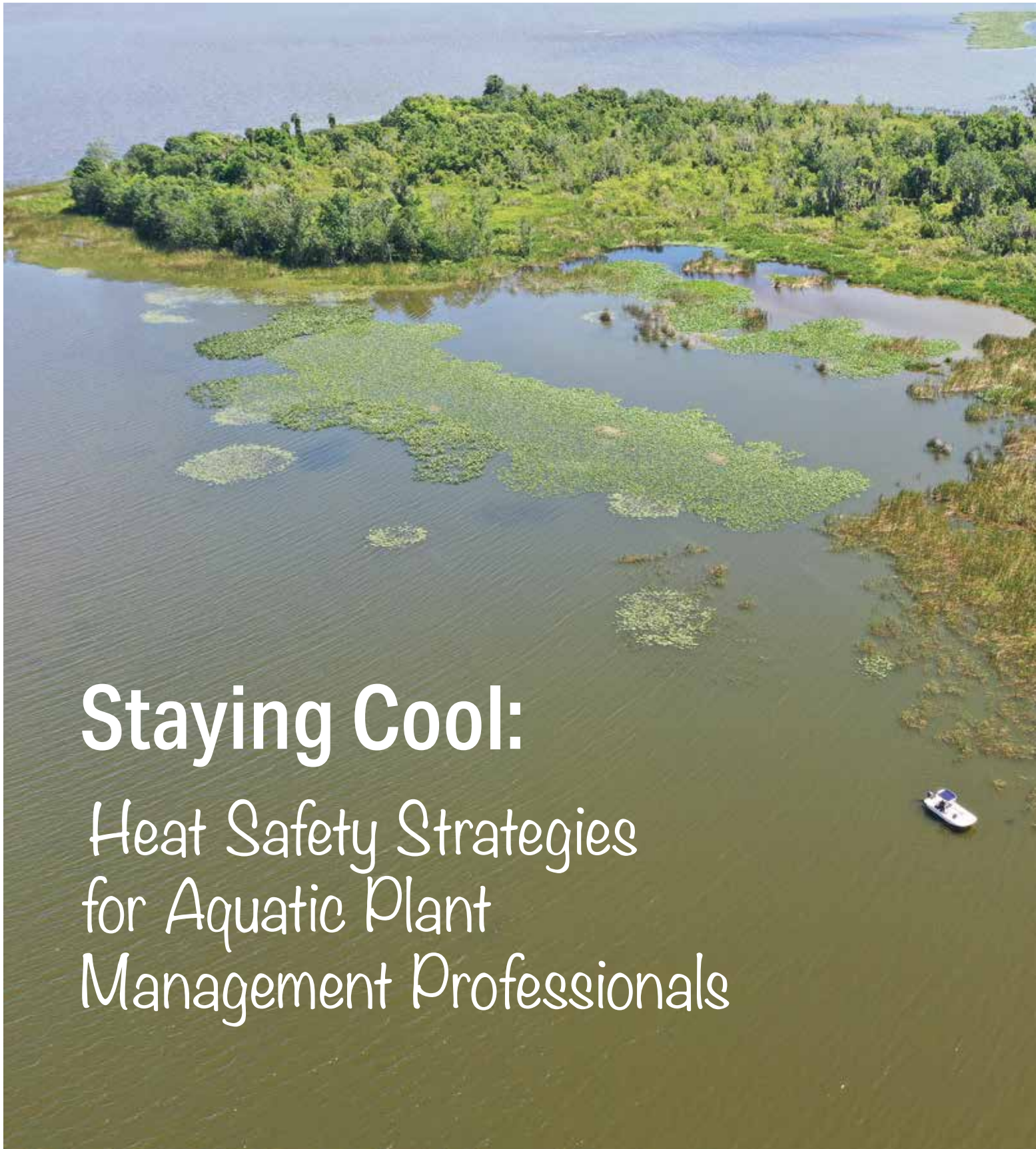
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# Staying Cool: Heat Safety Strategies for Aquatic Plant Management Professionals

Courtesy of the UF/IFAS Center for Aquatic and Invasive plants, photo credit to Kelli Gladding





Courtesy of the UF/IFAS Center for Aquatic and Invasive plants, photo credit to Cayla Romano

It is officially summer, and the temperature is high. Heat stress occurs when the body's ability to regulate its internal temperature fails according to the Centers for Disease Control and Prevention. Those exposed to extreme heat or who work in hot environments such as waterbodies throughout the state of Florida, may be at risk of experiencing heat stress. Heat stress can lead to heat illness such as heat stroke, heat exhaustion, heat cramps or heat rashes. The bodily stress can also lead to a higher risk of injuries.

Heat stress and heat-related illness are critical concerns for aquatic plant management professionals, especially those working on boats under the intense summer sun in Florida. The nature of their job requires them to spend extended periods outdoors, often with limited shade and exposure to reflective water surfaces, which can exacerbate heat conditions. This environment not only elevates the ambient temperature but also increases the risk of dehydration and overheating, making it imperative for these professionals to understand and mitigate the risks associated with heat stress.

Out on the water, dehydration and heat stress can occur quickly therefore it is important to recognize the signs and learn prevention strategies to avoid any occurrence. The physiological effects of heat stress can be severe, ranging from mild symptoms like heat rash and fatigue to more serious conditions such as heat exhaustion and heat stroke. Aquatic plant management professionals are particularly vulnerable due to the physical exertion involved in their tasks, including handling equipment and navigating waterways. Heat exhaustion can cause dizziness, nausea, and excessive sweating, which can impair judgment and coordination—critical factors when operating machinery or performing precision work. Without proper intervention, heat exhaustion can progress to heat stroke, a life-threatening condition characterized by confusion, loss of consciousness, and potential organ failure.

According to the Southeastern Coastal Center for Agricultural Health and Safety (SCCAHS), the signs of heat stress include higher body temperature, excessive sweating, feeling tired, dark-colored urine, and a



Courtesy of the UF/IFAS Center for Aquatic and Invasive plants, photo credit to Cayla Romano

fast heartbeat. Being aware of these warning signs can help prevent a heat-related illness from occurring.

According to SCCAHS, if you miss the warning signs and develop a heat-related illness there are a few signs to look out for:

**Heat Cramps** — Muscle cramping, pain, thirst, sweating, or fatigue.

**Heat Exhaustion** — Fainting; heavy sweating; cold clammy skin; or fast, weak pulse.

**Heat Stroke** — Body temperature is over 103 degrees; confusion; fast, strong pulse; or hot, red, dry, or damp skin. Heat stroke is a medical emergency and is life-threatening.

To combat heat-related illnesses, it is essential for aquatic plant management professionals to adopt preventive measures. Hydration is paramount; drinking water regularly, even before feeling thirsty, can

help maintain optimal body function. Wearing lightweight, breathable clothing, wide-brimmed hats, and sunglasses can provide additional protection against the sun. Scheduling work during cooler parts of the day, taking frequent breaks in shaded or air-conditioned areas, and using personal cooling devices can further reduce the risk. By prioritizing these strategies, aquatic plant management professionals can safeguard their health while effectively managing the aquatic environments under their care.

A collaboration of the Farmworkers Association of Florida, Emory University's Woodruff School of Nursing and one of the partner institutions of the SCCAHS, and SCCAHS has led to a comprehensive online, self-paced training course to help individuals recognize heat-related illness, prevention tools, reactive strategies, and strategies to develop heat safety programs. While developed for agricultural workers,



Courtesy of the UF/IFAS Center for Aquatic and Invasive plants, photo credit to Kelli Gladding

this guide can be beneficial to anyone working in extreme heat conditions like aquatic plant management applicators, researchers and engineers.

Implementing robust heat safety measures is not just a recommendation but a



necessity for aquatic plant management professionals working in the intense summer heat of Florida. Recognizing the signs of heat stress and heat-related illnesses is crucial for timely intervention and prevention. Organizations such as the Southeastern Coastal Center for Agricultural Health and Safety (SCCAHS) offer valuable resources and training to equip professionals with the knowledge needed

to stay safe in hot environments. By leveraging these resources and adopting best practices for heat safety, professionals can protect their health and continue to perform their vital work effectively. For comprehensive training and resources, visit the SCCAHS heat-related illness guide at <https://www.sccaahs.org/index.php/resources/heat-related-illness/>.

#### Sources:

- <https://www.cdc.gov/niosh/topics/heat-stress/default.html>
- <https://www.sccaahs.org/index.php/resources/heat-related-illness/>
- <https://edis.ifas.ufl.edu/publication/WC359>

*Written by Shelby Thomas  
Shelby Thomas Creative*

# SURVEY SAYS

## *A Look at the Working in the Weeds Podcast Listeners*

The UF/IFAS Center for Aquatic and Invasive Plants (CAIP) launched our podcast Working in the Weeds (WITW) in January 2022. We started the podcast to connect with our audience regularly and communicate the complexities behind invasive plant management and research. The first season focused on setting the stage for future conversations. Dr. Ferrell and I share the history and ecology of invasive aquatic plants in Florida. Then, we highlighted the CAIP faculty with individual episodes dedicated to their background as scientists and current research efforts during the second season. During the third season we started to talk with experts about concepts related to invasive plant management like the invasion curve, horizon scanning, as well as the pros and cons of management techniques.

By this time, we grew curious about who was tuning in and what they wanted to hear about next. To find out, we conducted a listener survey in October 2022 to learn about the listeners' motivations and feedback for future episodes. There were four overarching research questions that guided the development of the survey: *How did listeners discover WITW, Why do they listen to WITW, What is their level of satisfaction with the WITW production, and What content should the podcast consider covering next?*

To reach multiple stakeholder groups that often engage with CAIP information and resources, we promoted the survey at the 46<sup>th</sup> Annual Florida Aquatic Plant Management Society (FAPMS) Conference, on the CAIP social media platforms (Facebook, Instagram, and LinkedIn), and through our email listserv. This resulted in 24 listeners completing the survey. Today, I am excited to share some of their responses on the survey to *Aquatics* magazine readers like you.

We found out that 88% of listeners *work in the weeds* or are "involved in the field of aquatic and invasive plant management." About half of the respondents discovered



WITW through a work or school recommendation. The survey respondents shared that they listen to WITW for a variety of reasons whether it's to learn about new research (88%), keep up with invasive plant terminology and information (75%), learn core material for their job (67%), feel connected to CAIP (63%), be entertained and listen to stories (58%), learn about careers in science and natural resources (17%). Three respondents shared that they also listen to the podcast for other reasons not listed as an option on the survey. Two private applicators shared that they tuned in to share specific episodes and information to curious stakeholders. An academic peer explained that they listened because they are curious about our format.

Based on the survey, listeners appreciate a variety of episode styles ranging from interviews with invasive plant management researchers and professionals, to science storytelling, and educational episodes that highlight relevant research, programs, and resources.

The survey also had two open-ended questions that asked listeners to share their feedback and ideas. This was an opportunity for us to learn about their perspectives on a deeper level and resulted in two major themes: *Science is shared in a meaningful way* and *Listeners recommended to carry on the conversation*. One respondent shared:

"I would suggest however to not lose sight of the educational potential here. I understand how difficult it may be to put



this program together. I also understand that it should be expected to be more difficult to maintain the effort. When the effort becomes burdensome, when the excitement that comes with freshness begins to wane remember that somewhere out there in the listening audience is an applicator that has been treating mats of hyacinth in the elements for decades. What you do and have done here brightens the day and helps to remind those often-weary soldiers that what they are doing is important, that it matters, and some part of society gets it. It is not necessarily cheerleading, but it certainly is legitimizing.”

Another respondent requested that future episodes should focus on specific invasive plant species: “How about a deep dive into other major plant species such as hydrilla (and other submersed) and the wonderful world of algae?”

Thanks to these survey respondents we learned about WITW listeners and currently craft episodes geared towards their interests. For example, the season following the survey was dedicated to “Plant Deep Dives” where Dr. Ferrell and I invited different plant experts to talk about the biology and management of specific plants. Interested in learning more about the survey results? I invite you to read the original research paper cited at the end of this article.

If you are a WITW listener (even if you’ve only tuned in for one episode), thank you. If you haven’t had a chance to listen to an episode you can find us on all major podcasting platforms (Apple Music, Spotify, etc.) and on our website. Do you have topics or questions you would like us to discuss on this podcast? Email us at [caip@ifas.ufl.edu](mailto:caip@ifas.ufl.edu).

For more information and resources, visit our website. Stay connected to UF/IFAS CAIP by following us on Instagram and LinkedIn.

#### **Podcast Listener Survey Research Article:**

Krebs, C. L., Loizzo, J. L., Prince, C., & Ferrell, J. (2024). A survey of listeners’ perceptions of an extension-produced invasive plant podcast. *Advancements in Agricultural Development*, 5(3), 55–65. <https://doi.org/10.37433/aad.v5i3.457>

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## MAPMS Update

MAPMS extends its gratitude to everyone who attended the 44th Annual Conference in Columbus, OH. It was inspiring to see members engaged in discussions, exchanging ideas, and enjoying camaraderie. The 2024 conference program was designed with the society's strategic goals in mind and showcased quality research, industry updates, and innovative management strategies. Highlights of the 2024 conference program included presentations on emerging technologies, Bob Robinson's "Lessons Learned" presentation, and a research update from Zhaozhe Chen, recipient of the 2023 Robert L. Johnson Memorial Research Grant.

Student engagement is paramount to fulfilling the MAPMS mission and vision. Four graduate students presented at the conference and the following students won the Student Paper Contest:

**First Place:** Hannah Brown, University of Florida, *Evaluation of small-scale subsurface penoxsulam treatments on Waterhyacinth and Waterlettuce.*

**Second Place:** Ashley Wolfe, Montana State University, *Advancing Eurasian Watermilfoil management through the Integration of strain tracking and rapid herbicide assays.*

**Third Place:** Zhaozhe Chen, Ohio State University, *Field-scale application of artificial floating island for cyanotoxin reduction from residential raw sewage.*

The Robert L. Johnson Memorial Research Grant is the primary mechanism through which MAPMS supports graduate student research.

MAPMS proudly announces Maxwell Gebhart, Mississippi State University, as the recipient of the 2024 Robert L. Johnson Memorial Research Grant for his study on "The biology, ecology, and management of several invasive *Vallisneria* species." Let us join in congratulating Maxwell and supporting his research, which will aid aquatic plant managers in addressing these invasive plants.

MAPMS expresses sincere appreciation to all who contributed to the success of the Silent Auction and Raffle at the conference. Every purchase, from t-shirts to 50/50 tickets, and participation in bidding on silent auction items or purchasing raffle tickets, contributes to the Robert L. Johnson Memorial Research Grant.

We are committed to expanding awareness of MAPMS. Recently, the MAPMS booth was featured at the Indiana Lakes Management Society Conference and the Wisconsin Lakes and Rivers Convention. Please inform us about other organizations, conferences, or newsletters that could amplify our message. Additionally, we are leveraging social media platforms to enhance our outreach in alignment with our strategic plan. Heartfelt thanks to all who follow MAPMS on Facebook, Instagram, LinkedIn, and Twitter!

As we reflect on another successful conference, we eagerly anticipate the next one! MAPMS will return to the Palmer House in Chicago, IL, from February 24<sup>th</sup> to 27<sup>th</sup>, 2025, for the 45th Annual Conference. Keep an eye out in the fall for the call for papers, Robert L. Johnson Memorial Research Grant application, and registration forms. We look forward to seeing all of you there!

# Calendar of Events

July 15-18, 2024

## 64rd Annual Meeting of the Aquatic Plant Management Society

Hilton St. Petersburg Bayfront  
St. Petersburg, FL  
<https://apms.org/2023-annual-meeting/>

## September 30 – October 2, 2024 South Carolina Aquatic Plant Management Society Annual Conference

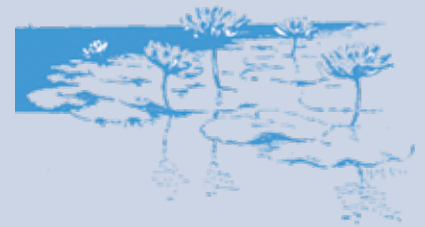
Ocean Drive Beach and Golf Resort  
North Myrtle Beach, SC  
<https://www.scapms.org/meetings.html>

## October 7-10, 2024 48th Annual Florida Aquatic Plant Management Society Annual Training Conference

Hilton Daytona Beach  
Oceanfront Resort  
Daytona Beach, FL  
<https://fapms.org/conference/2023-conference/>

## December 1 – 4 9th International Weed Science Congress

Jerusalem, Israel  
<https://www.iwsc2024.com/>



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**\*Call for Submissions\*** – The Florida Aquatic Plant Management Society is preparing the Fall 2024 Issue of Aquatics magazine and is seeking articles from industry professionals, researchers, and other interested authors. Submissions can be directed to [aquaticsmagazine@gmail.com](mailto:aquaticsmagazine@gmail.com).

Articles should be no longer than **2,500 words** in length and include photos, captions, author bio and email.

Want to write for us, but aren't sure what to write about? Below are some topics our readers are always interested in:

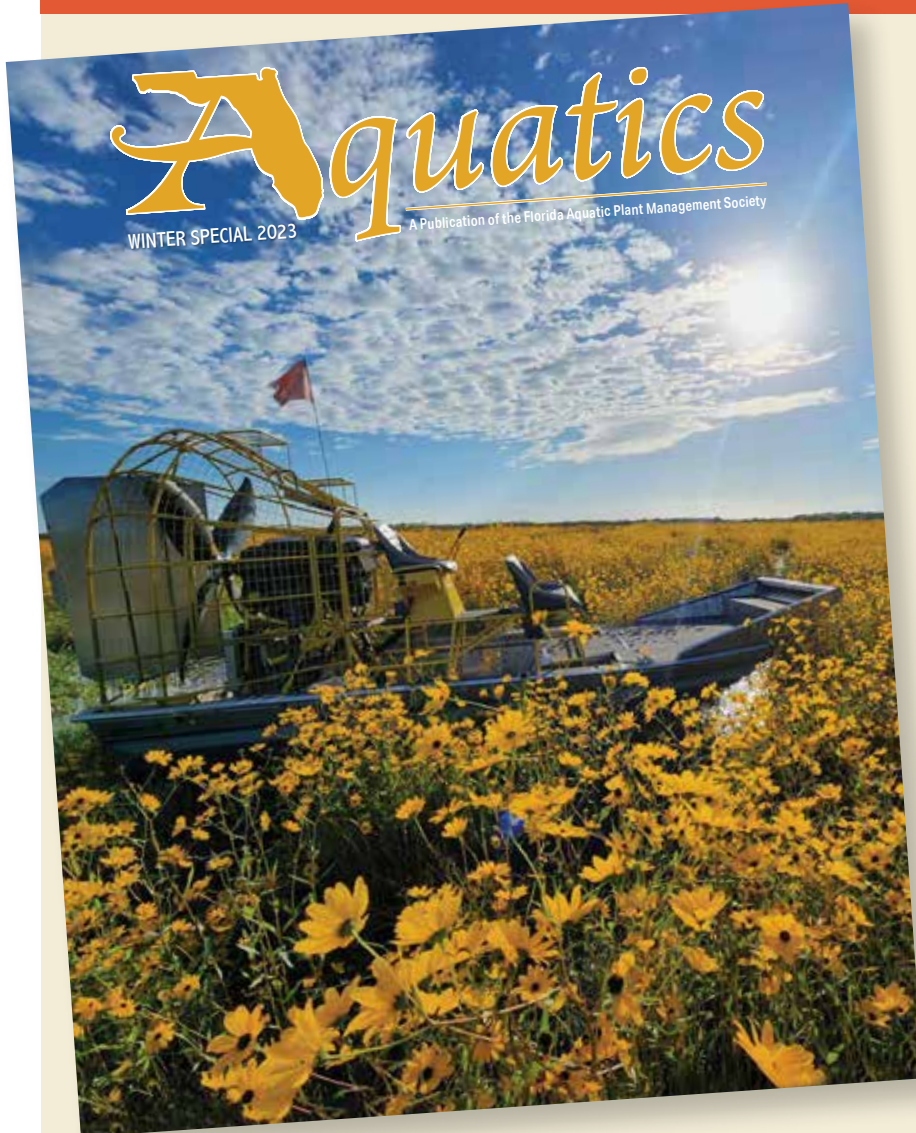
- Plant Identification (Native and Invasive)
- Research Updates
- Stories on the people of the aquatic and related industries
- Photo stories – Do you spend a lot of time on the water taking photos that tell a story of some particular plant or a part of Florida? Submit your series of photos with captions and we can share your story!
- Waterbody updates
- Agency Updates

Please submit proposed content no later than August 15, 2024.

Thanks, Shelby

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