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A Texas Aquatic Plant Management Society Publication

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## Texas Aquatic Plant Management Society Newsletter

# On the Water

## President's Update

Hello fellow TAPMS members! I hope that this year has been successful and productive for everyone both personally and professionally in the world of aquatics.

We are looking forward to our annual gathering that is just around the corner on November 18-20 at the Stella Hotel in Bryan, TX. Our conference will kick off on Monday with a golf tournament. Monday evening we have an exciting President's Reception planned. We have a fantastic line up of speakers this year that will provide a wide variety of educational opportunities. Presentations commence on Tuesday morning and continue until mid-day on Wednesday. I am extremely proud of all the hard work our board has put into preparing for the conference; you won't want to miss this year's event. If you haven't signed up yet, you can do so through the website [www.tapms.org](http://www.tapms.org).

See you at the conference!  
Chris Smith



# Texas Aquatic Plant Management Society Annual Conference November 18 -20, 2019

Located at:

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

Register online: <https://texasaquaticplantmanagementsociety.wildapricot.org/event-3529271/Registration>

## **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 18-20, 2019** at the Stella Hotel. Included in your conference registration: Monday night social, Tuesday continental breakfast, lunch, AM & PM breaks, and Award Banquet dinner, & Wednesday continental breakfast and AM break. TAPMS has reserved rooms at a discounted group block rate of \$115.00 for the dates of the conference. The link for attendees to make their reservations: [TAPMS 2019 Conference](#)

Attendees can also call the hotel directly at [979-421-4000](tel:979-421-4000) and ask to book a room in the "TAPMS 2019 Conference" block or they can go to [www.thestellahotel.com](http://www.thestellahotel.com) and use the Group Code: TAPMS1119.

# 6th Annual TAPMS Golf Tournament

## Monday, November 18, 2019

**You can sign up to play at the TAPMS webpage:**

<https://texasaquaticplantmanagementsociety.wildapricot.org/admin/website/?pageId=7738>



### 6TH ANNUAL TAPMS GOLF TOURNAMENT

MONDAY NOVEMBER 18<sup>TH</sup>

1:00 PM START

AT THE CITY COURSE AT THE PHILLIPS EVENT CENTER. A REGULATION COURSE THAT OFFERS A PARK-LAND STYLE OF PLAY WITH TIGHT FAIRWAYS AND SMALL GREENS THAT ARE SURE TO CHALLENGE YOU.  
18 HOLE WITH GOLF CART \$60.00 PER PLAYER

2 - Player Scramble

1<sup>st</sup> place trophy

TO REGISTER ONLINE: [GOLF TOURNAMENT](#)

PLAYERS CAN REGISTER AS A TEAM, OR INDIVIDUALS WILL BE PLACED WITH ANOTHER PLAYER.

FOR MORE INFORMATION, CONTACT JOSHUA: [joshua.flowers@icloud.com](mailto:joshua.flowers@icloud.com)

## DAILY EVENTS-AT-A-GLANCE

### MONDAY - NOVEMBER 18, 2019

TAPMS Pre-Conference Board of Directors Meeting & Work Session

Golf Tournament – *Sponsored by: WinField United (Diamond Sponsor)*

Exhibits Setup

Conference Check-In and Onsite Registration

Presidents' Reception -- *Sponsored by: WinField United (Diamond Sponsor), Outdoor Water Solutions (Platinum Sponsor)*

### TUESDAY - NOVEMBER 19, 2019

#### *Morning*

Conference Check-In and Onsite Registration

Meeting Opens – President's Welcome – Diamond Sponsor Welcome – APMS Update - General Session

**Luncheon** – *Sponsored by: WinField United (Diamond Sponsor), Outdoor Water Solutions (Platinum Sponsor), Syngenta (Gold Sponsor), Keeton (Gold Sponsor), UPL (Gold Sponsor)*

#### *Afternoon*

General Session (Adjourns – 5:00 p.m.)

Women of Aquatics Meeting

Awards Banquet - TAPMS Awards Presentations & Election Results – *Sponsored by: WinField United (Diamond Sponsor)*

Closing Cocktail Hour

### WEDNESDAY - NOVEMBER 20, 2019

Conference Check-In and Onsite Registration

General Session (Adjourns – 11:50am)

Pesticide Applicators Receive CEU Certificates

Post-Conference Board Meeting

*Breaks sponsored by: WinField United (Diamond Sponsor), Outdoor Water Solutions (Platinum Sponsor), Syngenta (Gold Sponsor), Keeton (Gold Sponsor), UPL (Gold Sponsor), and Airmax (Silver Sponsor)*



## DETAILED AGENDA

\* Indicates student presentation

<sup>CEU</sup> indicates attendance credit of 1.0 CEU except in session 6 each is 1/3 CEU (pending TDA confirmation)

### MONDAY - NOVEMBER 18, 2019

- 12:00 PM - 3:00 PM Pre-conference board meeting/work session (*Board Members; Orion*)  
1:00 PM - 7:00 PM 6th Annual TAPMS Golf Tournament (*Phillips Event Center*)  
*Sponsored by: WinField United (Diamond Sponsor)*  
4:00 PM - 6:00 PM Conference early check-in and onsite registration (*LUNA*)  
4:00 PM - 6:00 PM Exhibitor set up (*Prefunction B*)  
6:30 PM - 8:30 PM President's reception (*The Pavilion*)  
*Sponsored by: WinField United (Diamond Sponsor),  
Outdoor Water Solutions (Platinum Sponsor)*

### TUESDAY - NOVEMBER 19, 2019

- 7:00 AM - 8:00 AM Conference check-in and onsite registration (*Luna*)  
7:30 AM - 8:30 AM Continental breakfast (*Prefunction B*)

#### **Opening Remarks**

- 8:00 AM - 8:15 AM Welcome & announcements  
(*Chris Smith; TAPMS President*)

#### **Session 1: Updates and Overviews (Moderator: Chris Smith)**

- 8:15 AM - 8:30 AM Aquatic Plant Management Society Update  
(*Mark Heilman; APMS President*)  
8:30 AM - 9:20 AM <sup>CEU</sup> Overview and updates on state & federal laws and regulations  
(*Carlton Layne; Aquatic Ecosystem Restoration Foundation*)  
9:20 AM - 10:10 AM <sup>CEU</sup> Statewide integrated pest management of aquatic and riparian invasive species  
(*John Findeisen and Monica McGarrity; Texas Parks & Wildlife Department*)  
10:10 AM - 10:30 AM Morning Refreshment Break; Raffle; Applicators complete 2 CEU roster for Session 1

#### **Session 2: Aquatic Plant Ecology & Conservation (Moderator: Melani Howard)**

- 10:30 AM - 10:50 AM A thirty-year assessment of the endangered aquatic macrophyte, *Zizania texana*, endemic to the upper reach of the San Marcos River  
(*Jeffrey Hutchinson, Ph.D.; University of Texas – San Antonio*)  
10:50 AM - 11:10 AM Native Texas aquatic plants: An overview and case studies  
(*Casey Williams; BIO-WEST, Inc*)

### TUESDAY - NOVEMBER 19, 2019

#### **Session 2: Aquatic Plant Ecology & Conservation (Continued)**

- 11:10 AM - 11:30 AM Conservation of endangered Texas wildrice and its habitat in the San Marcos River  
(*Christopher Hathcock, Ph.D.; U.S. Fish and Wildlife Service*)

11:30 AM - 11:50 AM Establishment of macrophytes in Honeycut Springs, C.L. Browning Ranch, Johnson City, Texas  
(*Jeffrey Hutchinson, Ph.D., Landon Camp; University of Texas-San Antonio and Scott Gardner; C.L. Browning Ranch*)

11:50 AM - 12:10 PM \*Mitigation of invasive aquatic species to preserve native submerged aquatic vegetation in the San Marcos River, Texas.  
(*Francesca Filippone, Christopher Riggins, and Collin Garoutte; Texas State University – The Meadows Center for Water and the Environment*)

12:10 PM - 1:10 PM Luncheon (*Celeste B&C*)

*Sponsored by: WinField United (Diamond Sponsor), Applied Biochemists (Platinum Sponsor), Syngenta (Gold Sponsor), Outdoor Water Solutions (Gold Sponsor), UPL (Gold Sponsor)*

### **Session 3: Ecology and Management of Invasive Species (Moderator: Jason Chapman)**

1:10 PM - 1:30 PM More bang for your buck: Using less copper to control harmful algal blooms  
(*Patrick Simmsgeiger; Diversified Waterscapes, Inc.*)

1:30 PM – 2:20 PM <sup>CEU</sup> Introduction pathways for invasive aquatic plants  
(*Lyn Gettys, Ph.D; University of Florida*)

2:20 PM - 2:40 PM \**Nymphoides* in Florida  
(*Ian Markovich, Kyle Thayer, Joseph Sigmon, Mohsen Tootoonchi, and Lyn Gettys, Ph.D.; University of Florida*)

2:40 PM - 3:00 PM An inconspicuous invasive *Hygrophila polysperma*: Its ecology and identification  
(*Casey Williams, BIO-WEST, Inc*)

3:00 PM - 3:20 PM \*Efficacy of aquatic herbicides and combinations on redroot floater and *Azolla* in mesocosms  
(*Joseph Sigmon, University of Florida*)

3:20 PM - 3:50 PM Afternoon Refreshment Break; Raffle; Applicators complete 1 CEU roster for Session 3

## **TUESDAY - NOVEMBER 19, 2019**

### **Session 4: Management of Nutrients in Water Bodies (Moderator: Brad Vollmar)**

3:50 PM - 4:10 PM Understanding and managing the influence of nutrients in water resources  
(*Clint Formby; Sepro Corporation*)

4:10 PM - 4:30 PM \*Tapegrass from different regions tolerates different amounts of salt  
(*Mohsen Tootoonchi, Lyn Gettys, Ph.D., Kyle Thayer, Ian Markovich, and Joseph Sigmon; University of Florida*)

4:30 PM - 4:50 PM Can invasion be reversed by removing the main driver or has a regime shift occurred?  
A test case using a simulated wetland ecosystem  
(*Jason Martina, Ph.D.; Texas State University*)

4:50 PM - 5:00 PM Closing remarks for the day  
(*Chris Smith, TAPMS President*)

### **Tuesday Post-Session Events**

5:15 PM - 6:00 PM Women of Aquatics Meeting (*Hersehels*)

6:30 PM – 8:00 PM Banquet Dinner & Awards (*Celeste B&C*)  
*Sponsored by: WinField United (Diamond Sponsor)*

8:00 PM – 9:00 PM Closing Cocktail Hour (*Celeste B&C*)

## **WEDNESDAY- NOVEMBER 20, 2019**

7:00 AM - 8:00 AM Conference check-in and onsite registration (*Luna*)

7:30 AM - 8:30 AM Continental breakfast (*Prefunction B*)

## Opening Remarks

- 8:00 AM - 8:05 AM Welcome & announcements  
(Chris Smith; TAPMS President)
- 8:05 AM - 8:10 AM Welcome from Platinum Sponsor, Outdoor Water Solutions, and update on research & operations related to aquatic plant management.  
(John Redd; Outdoor Water Solutions President)

## Session 5: Drift Technique and Chemical Use for Invasive Species Control (Moderator: Kristy Kollauss)

- 8:10 AM – 9:00 AM <sup>CEU</sup> Drift Minimization: Maximizing your chemical investment: When bad things happen to good droplets  
(Chris Smith; Winfield United)
- 9:00 AM – 9:20 AM Operational experiences with ProcellaCOR for key Texas aquatic invasive plants  
(Mark Heilman; SePro Corporation)
- 9:20 AM – 9:40 AM Use of granular copper EDA (Harpoon) for Hydrilla control in Texas  
(Paul Westcott, Kelly Duffie, Dave Bass, Bill Ratajczyk, and Ryan Wersal; Applied Biochemists)

## WEDNESDAY- NOVEMBER 20, 2019

### Session 5: Drift Technique and Chemical Use for Invasive Species Control (Continued)

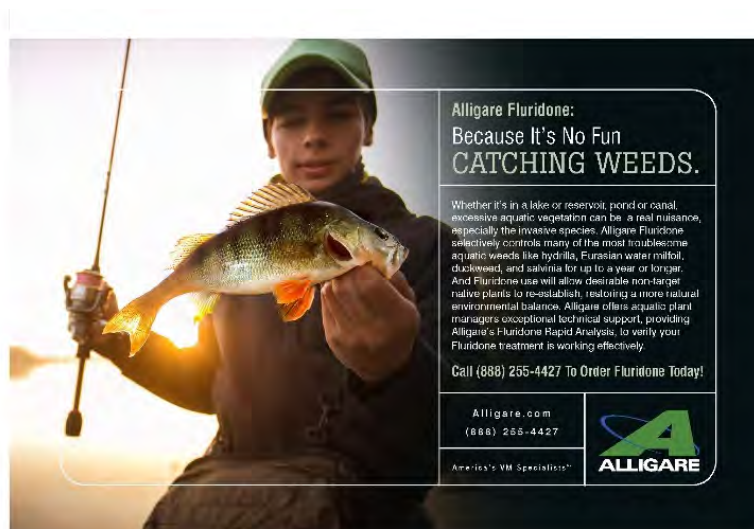
- 9:40 AM - 10:00 AM ProcellaCOR efficacy on submersed plants at varying contact exposure times  
(Lyn Gettys, Ph.D., Kyle Thayer, Ian Markovich, Joseph Sigmon, and Mohsen Tootoonchi; University of Florida)
- 10:00 AM - 10:20 AM Morning Refreshment Break; Raffle; Applicators complete 1 CEU roster for Session 5

### Session 6: Texas Invasive Management Strategies (Moderator: David Finethy)

- 10:20 AM - 10:40 AM <sup>CEU</sup> Managing nuisance vegetation in the San Marcos River for endangered species  
(Bryce Cuda; Cuda Conservation)
- 10:40 AM - 11:00 AM <sup>CEU</sup> *Cyrtobagous salviniae* (Salvinia weevil) and its role in Salvinia control in Texas  
(Thomas Decker; Texas Parks and Wildlife Department)
- 11:00 AM - 11:20 AM <sup>CEU</sup> Aeration: A key tool in aquatic system restoration and management  
(Patrick Goodwin; Vertex Water Features)
- 11:20 AM - 11:40 AM “Protect the lakes you love”: TPWD’s aquatic invasive public awareness campaign  
(Carly Montez; Texas Parks and Wildlife Department)
- 11:40 AM - 11:50 AM Conference Final Address and looking forward to the 2020 joint AMPS/TAPMS meeting  
(Chris Smith, TAPMS president)
- 11:50 AM - 12:20 PM Applicators receive CEU certificates

## Post-Conference Events

- 1:00 PM - 2:30 PM Post-Conference Board Meeting (Orion)



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## Member Spotlight on Emily Griffith



Emily has been fortunate in being able to integrate her career with her family and her passion for aquatic resource management. Emily works for Sprayco, which is a family owned and operated business - her father is the President and owner. Emily handles all sales, project management, compliance, safety, mapping, and supervises the operations of the aquatic department.

Sprayco was started in 1957 by the Held family. Emily's father, George Pylant III, was their herbicide representative for many years. In 2004, the Held family approached George with an opportunity to buy the company. George quickly enlisted the help of his four children, and together they worked to purchase the company.

Emily finished her Bachelor's degree at University of St. Thomas-Houston in Environmental Studies. During her time at the university and for a time afterward, she worked as a Utility Forester for Davey Tree Company in Austin and San Luis Obispo on the PG&E account. She also worked as a Wilderness Instructor in Texas and North Carolina for Aspen Education. Emily then started work for Sprayco, spending time in the field. Emily enjoys working outdoors and learning the details of aquatic system management that restores balance. "Our aquatics department has grown immensely over the years, and my role within our company and involvement in TAPMS increased and coincided as such. I work directly with many river authorities, municipalities, state agencies, and water authorities throughout Texas, Louisiana, and Arkansas." This growth is greatly rewarding because it supports the people Emily loves most.

Emily joined TAPMS in 2007 and Sprayco began sponsoring items at the conference. She became Secretary around 2010 and really enjoyed serving the group and growing the organization. In 2016 she was voted in as President and in 2017, was asked to join the initial board of directors for Women of Aquatics; which has been a wonderful group of professionals to grow with and network amongst. This is an important role as Emily strives to offer insight on a women's perspective in an industry where she is typically the only woman in the room.



The following is a series of perspectives on the continuing Glyphosate issue (pages 10 – 12):

## Is Glyphosate Still a Reasonable Option for Aquatic Weed Management?

*Stephen Enloe and Jason Ferrell, UF Center for Aquatic and Invasive Plants*

There is significant clamor these days about glyphosate and whether it can or should be used as a part of an integrated pest management program. The concerns over this molecule are many and focus on both the science of health risk and public perception. We seem to be standing at a point where a constant barrage of news from social media outlets have painted a very dark picture of the herbicide we have deemed safe for decades. Therefore, let's briefly consider where we are with the science and see if we can find a path forward.

The concerns with glyphosate started in 2015 when the International Agency for Research on Cancer (IARC) reclassified this molecule from "Possible Carcinogen" to "Probable Carcinogen". This change in classification sent shockwaves across the world since we have been told for decades that glyphosate was essentially benign to humans or the environment. This reclassification was a significant move and has since prompted many countries to re-review the data on glyphosate and determine if additional changes in categorization are required.

Subsequent independent re-reviews conducted by the US Environmental Protection Agency, the European Food safety Authority (EFSA), the European Chemicals Agency, Health Canada, France, Germany, Switzerland, New Zealand, Japan, Brazil, Australia, and South Korea have all come to conclusions that disagree with the IARC assessment. In short, none of these other agencies have concluded from the review of hundreds of studies that glyphosate poses a significant health risk. This begs the question, why does everyone seem to disagree with IARC?

This is a complicated and very technical question. If you are interested in a deep dive into this issue, we would highly recommend reading Tarazona et al. 2017 for a full explanation of why the European Union disagrees with the IARC. However, here are some very important nuances of this reclassification. First, we need to set the conspiracy theories aside. The IARC did not make this decision because they are activists that want to penalize pesticides. The IARC is a group of very talented researchers with high ethical standards and a long track record of evaluating a very broad range of substances and activities that may cause cancer. The timing of their reassessment was legitimate and this does not seem to be a political move.

Second, according to Tarazona et al. (2017), the assessment of all the data show that the IARC and EFSA were actually in very close agreement on most points. However, they differed in their interpretation of specific data that could provide evidence of carcinogenicity in humans. In the end the IARC concluded it was enough to reclassify glyphosate while the EU concluded the data were too weak and inconsistent to warrant reclassification.

Third, what does "Probable Carcinogen" actually mean? It means that there is limited evidence that a substance or activity causes cancer in humans, but sufficient evidence in model species (mice and rats). If the IARC is correct (and it is still an "if") that glyphosate is a probable carcinogen, it moves it into the same classification that contains consumption of red meat, consumption of beverages heated to >65C, and workplace exposure to haircare products (here is the full list). It is important to recognize that the IARC did not move glyphosate to its category of known carcinogens. This fact has been completely ignored or missed by most media outlets. Known carcinogens like sunlight and tobacco are in a completely different classification than glyphosate and those stating that glyphosate is now a known carcinogen are doing so without scientific basis. The IARC is not saying that glyphosate causes cancer, but that it may be possible for glyphosate to cause cancer, just like consuming very hot beverages. But again, it is important to remember that just because IARC has made this designation doesn't make it so. Pesticide regulatory agencies around the world currently disagree with this assessment and the IARC continues to stand alone.

Finally, the outcomes of the recent lawsuits filed against Monsanto on current public opinion cannot be overstated. In all three cases, juries have found in favor of the plaintiffs against the company. These jury outcomes would certainly seem to suggest glyphosate causes cancer. We cannot comment on what evidence for glyphosate causing cancer was presented or excluded from the trials. However, the jury decisions simply do not line up with the independent scientific assessments of every pesticide regulatory authority around the world that has re-reviewed glyphosate. This leaves us in a very difficult place where science and human psychology in the courtroom have moved in very different directions.

So where do we go from here? Should we abandon glyphosate as a useful tool in IPM programs? We would suggest that until additional and more convincing data are generated in rigorous studies and published, glyphosate is not likely carcinogenic and can be safely used in integrated pest management. However, we must remain willing to change this opinion if the data indicates otherwise. We would also suggest that we dedicate ourselves and our employees to education on this issue and strongly adhere to all glyphosate product label directions. Finally, committing ourselves to the dispassionate scientific evidence and being careful not to be swayed by emotion will also help us navigate this important topic. (AERF July 2019 newsletter)

## Perspective from Health Canada in Ottawa:

Health Canada's primary objective in regulating pesticides is to protect Canadians' health and the environment. That is why the Department regularly reviews all pesticides to make sure that they continue to meet modern health and safety standards. Following the release of the Department's final reevaluation decision on glyphosate in 2017, Health Canada received eight notices of objection. There have also been concerns raised publicly about the validity of some of the science around glyphosate in what is being referred to as the Monsanto Papers. Health Canada scientists reviewed the information provided in these notices, and assessed the validity of any studies in question, to determine whether any of the issues raised would influence the results of the assessment and the associated regulatory decision.

After a thorough scientific review, Health Canada concluded that the concerns raised by the objectors could not be scientifically supported when considering the entire body of relevant data. The objections raised did not create doubt or concern regarding the scientific basis for the 2017 reevaluation decision for glyphosate. Therefore, the Department's final decision will stand.

Health Canada follows a transparent and rigorous science-based regulatory process when making decisions about the safety of pesticides. As part of this process, Health Canada will publish its response to each notice of objection in the Pest Management Regulatory Agency's Public Registry on January 14. Scientists left no stone unturned in conducting this review. They had access to all relevant data and information from federal and provincial governments, international regulatory agencies, published scientific reports and multiple pesticide manufacturers. This includes the reviews referred to in the Monsanto Papers. Health Canada also had access to numerous individual studies and raw scientific data during its assessment of glyphosate, including additional cancer and genotoxicity studies.

To help ensure an unbiased assessment of the information, Health Canada selected a group of 20 of its own scientists who were not involved in the 2017 re-evaluation to evaluate the notices of objection. No pesticide regulatory authority in the world currently considers glyphosate to be a cancer risk to humans at the levels at which humans are currently exposed. Health Canada continues to monitor for new information related to glyphosate, including regulatory actions from other governments, and will take appropriate action if risks of concern to human health or the environment are identified. <https://www.canada.ca/en/health-canada/news/2019/01/statement-from-health-canada-on-glyphosate.html> Contacts Media Relations Health Canada 613-957-2983 [sc.media.sc@canada.ca](mailto:sc.media.sc@canada.ca)

To obtain a copy of Re-evaluation Decision RVD2017-01, Glyphosate, please contact the publications office of the Pest Management Regulatory Agency. ISSN: 1925-1025 (PDF version) Catalogue number: H113-28/2017-1E-PDF S



## It's Not About Glyphosate – Or Science

*Bernalyn McGaughey*

The herbicide glyphosate is one of the most important, and safest, weed control tools in existence. The US Environmental Protection Agency, the European Commission and other health and environmental agencies have declared it safe as used, and it's licensed in 130 countries. So far, only one institution – the quasi-governmental World Health Organization's (WHO) International Agency for Research on Cancer (IARC) – has declared glyphosate a hazard as a "Class 2a carcinogen" ("probably carcinogenic to humans"), right alongside other 2A listed products such as DDT, Diazinon, Dieldrin, lead compounds, Malathion and – malaria. The 5 insecticides listed here have all been banned, and UNICEF reports that malaria kills one child every 30 seconds, which is about 3000 children a day. IARC's labeling of glyphosate as a Class 2A carcinogen is extremely controversial, based on faulty application of data in the listing process, and out of line with every other global regulatory system's conclusion.

However, now that the label is out there, the battle is on for manipulating public opinion, and heck with the science or validity of any conclusion other than what can be emotionally persuaded. Christopher Bossoi notes that "federal regulation in almost any area of national life is today's governmental response to yesterday's conditions . . . This observation applies particularly to any area of great scientific or technological complexity." The general public, particularly those Twittering each other and getting their "science" from live feeds, has no clue as to which version of The Glyphosate Story is true. And to them, it doesn't really matter anyway. For example, Judge Chhabria, the California judge handling the first bellwether glyphosate class action suits, instructed the jurors that they "must not defer to regulatory agencies" and should instead reach their own judgement based on the evidence presented at trial. Consequently, the complex, lengthy and repeated process of government scientific review of glyphosate and the weight of evidence supporting their conclusions, has no relevance. However, the juror most typically has neither the scientific specialization nor the investment of time to "weigh" one piece of evidence against another.

Accusations on glyphosate's "hazard" are based largely on the misapplication of two groups of studies that can be found in published literature: those under conditions that are grossly out of line with how human exposure could actually occur, and those that are extrapolations from human population data (epidemiology studies). For example, studies that are conducted on unusual organisms – or through extreme exposure methods – or to tissues in vitro that are isolated from their normal metabolic processes – do not produce results in and of themselves that can be related to environmental levels of exposure. A valid scientific assessment that properly casts the weight-of-evidence of each study reviewed for the assessment in the analytical process would not find such information as damning or even relevant to a hazard conclusion in the absence of collaborating data generated through validated methods of testing.

For example, a Canadian scientist, Deborah Kurrasch, who's main research is on bisphenol A, admits that the experiments she has run are in their "early days for this field of research," which means that their repeatability and validity as a predictive tool for effects in humans or other non-target organisms is unproven. With regard to her findings of "hazard" related to glyphosate, one set of experiments involves soaking nematode worms, *C. elegans*, in Touchdown (a glyphosate formulation)—"in concentrations used by pesticide applicators—as a model to understand what effect the product could have on the nervous system of animals."<sup>ii</sup> Unless you fill your hot tub with field-application-strength glyphosate spray mixture (and put your head underwater) and soak for some portion of your day or Aquatic Ecosystem Restoration Foundation Page 12 (McGaughey continued) lifetime, your exposure to glyphosate levels in the environment are inconsequential when compared to a dose like that, setting aside other complicating factors like surface-active agents in the formulation and those hot tub chemicals that keep your water clear.

The second group of studies, those pooling large amounts of human population data and disease or death incidences, the same principle is true: without collaborating findings from studies using established methodologies and interpretation of those studies in a complex risk assessment process, there are many reasons why epidemiology studies cannot stand on their own to "predict" a hazard. A group of scientists working under a grant from NIEHS published one such "meta-analysis" on glyphosate.<sup>iii</sup> Their conclusion was that their "meta-analysis" of human epidemiological studies suggests a compelling link between exposures to glyphosate-based herbicides and increased risk for non-Hodgkin's Lymphoma (NHL). However, the underlying variabilities in data, assumptions on exposure, and even the initial hypothesis of such an analysis hugely complicate the actual power of the "meta-analysis" to reliably point to an "increased risk" for a single given endpoint such as NHL.

Add to the uncertainty of the methods the uncertainty of the disease itself that is at issue, non-Hodgkin's Lymphoma. According to the Mayo Clinic, "Non-Hodgkin's lymphoma is more common than the other general type of lymphoma — Hodgkin lymphoma. Many different subtypes of non-Hodgkin's lymphoma exist. . . In most cases, doctors don't know what causes non-Hodgkin's lymphoma. . . In most cases, people diagnosed with non-Hodgkin's lymphoma don't have any obvious risk factors. And many people who have risk factors for the disease never develop it. There are six types of Hodgkin lymphoma, but to date at least 61 types of lymphomas have been described that have different characteristics from Hodgkin lymphoma. These were designated non-Hodgkin lymphomas and are divided further based on their development, spread and treatment options. Today, non-Hodgkin lymphoma represents the most common malignancy of the lymphatic system, and since the early 1970's the incidence rates have nearly doubled. Since medicine does not know what causes this cancer, and it is actually a disease of many different forms, and since no one form of this disease is connected to any specific set of risk factors, blaming glyphosate for an "increased risk" of it is simply not possible.

As Roger Peng reports in the Royal Statistical Society's magazine *Significance*, we have "a growing problem in science today: collecting data is becoming too much fun for everyone. Developing instruments, devices, and machines for generating data is fascinating, particularly in areas where little or no data previously existed. Our phones, watches, and eyeglasses all collect data. Because collecting data has become so cheap and easy, almost anyone can do it. . . Data follow us everywhere and analyzing them has become essential for all kinds of decision-making. Yet, while our ability to generate data has grown dramatically, our ability to understand them has not developed at the same rate."

The formula, then, is this: [A widely-used, largely innocuous-to-humans herbicide introduced in the 1970's] + [A disease with no cause that has nearly doubled since 1970] x [(Social Media)x(Deluge of Data)] = Unprecedented Opportunity for Public Manipulation. In 1967, Frank Graham, writing for the National Audubon Society, noted "Conservationists have learned that it is not enough to complain to the world at large. Their most effective weapon against pollution is a well-substantiated case aimed at a specific target."<sup>vi</sup> At that time the target was DDT. At that time, the newly formed Environmental Defense Fund, which was leading the litigation against DDT, noted that if they were successful in the effort of banning DDT, then nothing would stop them from successfully felling their next target.

Looking at a few clips of news items from the first 6 months of the year seems to demonstrate that The Glyphosate Story is no longer one of science:

Genetic Literacy Project: Science not Ideology  
Examining the EU's contradictory treatment of glyphosate and copper sulfate pesticides  
Andrew Porterfield | December 19, 2018

"The politics of the European Union have often left observers baffled. But the decisions—and lack thereof—over how to regulate two popular pesticides have culminated in a series of contortions as member countries, courts and the European Parliament try to combine a strict precautionary principle, support of organic agriculture, and science. The last category usually has received the shortest shrift. For both the herbicide glyphosate and the fungicide copper sulfate, the EU granted a five-year license. But there the similarity of how Europe handled them ends."

([https://geneticliteracyproject.org/2018/12/19/examining-the-eus-contradictory-treatment-of-glyphosate-and-copper-sulfate-pesticides/?mc\\_cid=63a55113fe&mc\\_eid=f44735d811](https://geneticliteracyproject.org/2018/12/19/examining-the-eus-contradictory-treatment-of-glyphosate-and-copper-sulfate-pesticides/?mc_cid=63a55113fe&mc_eid=f44735d811))

Agrow Agribusiness Intelligence  
US Judge agrees to limit evidence in glyphosate cancer trials  
J. R. Pegg | January 7, 2019

The issues of Monsanto's alleged attempts to influence the EPA and other regulatory agencies and to manipulate public opinion are a "significant portion" of the plaintiffs' case, according to the judge. "These issues are relevant to punitive damages and some liability questions," he explained. "But when it comes to whether glyphosate caused a plaintiff's NHL [Non-Hodgkin's Lymphoma], these issues are mostly a distraction, and a significant one at that. . . Judge Chabria concluded that this "relatively minor concern" could be addressed by an instruction to the jurors that they "must not defer to regulatory agencies" and should instead reach their own judgement based on the evidence presented at trial." (<https://agrow.agribusinessintelligence.informa.com/AG030678/US-judge-agrees-to-limit-evidence-inglyphosate-cancer-trials>) (AERF June 2019)



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## APMS Gets a New Logo!

Since the founding as the Hyacinth Control Society in 1961, APMS has been represented by the same logo featuring a flowering water hyacinth. After almost 60 years, the APMS board believed the logo was ready for modernization – and in a format compatible with applications from printed documents and banners to apparel. The APMS Board sought input to develop, and approved a look that is crisp, approachable, smart, friendly and aquatic. The design goal is to represent the broader aquatic plant and algae management issues that are now embraced by the Society's evolving mission and vision. The new logo maintains a connection with our roots as the Hyacinth Control Society, while providing a clean, modern look of our multi-disciplinary mission.

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\*Terms and Conditions of the 2015 H2O Aquatic Herbicide Performance Guarantee apply. The maximum benefit a Qualifying Participant may receive during the 2015 Program Period is a \$50,000 contribution toward the cost of retreatment.

### QUICK FACT

The most effective way of protecting public health from harmful algal blooms is avoiding water containing cyanobacteria. That's why EPA developed the Cyanobacteria Assessment Network mobile app, an early warning indicator system for algal blooms in U.S. freshwater systems, which will allow local water quality managers to proactively plan for cyanobacteria harmful algal blooms in their communities.

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## Contribute to 2019 TAPMS Newsletters

Participation in TAPMS shouldn't end after the conference and this newsletter is a great way to share information. Our editor needs your help to keep the newsletter interesting, timely, and relevant. Want to share information about an event of interest to the society? Have an interim update on new research or new product testing results? Willing to share a "day in the life of" story for students as a professional in our field or want to write a member highlight about a TAPMS colleague? Have a funny story from field work? Don't keep it to yourself—email the editor after the conference!

