



# PEDOLOGUE

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**This document is the second issue of Volume 34, 2023.**

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## Calendar of some coming events

October 29-Nov.1, 2023. ASA, SSSA and CSS Annual international meeting, St. Louis, MO. [Home | ASA, CSSA & SSSA International Annual Meetings \(acsmeetings.org\)](http://acsmeetings.org)

November 11, 2023, MAPSS manganiferous soils field day outing in Carrol County, MD

Register preferably by October 27 at:

[https://docs.google.com/forms/d/e/1FAIpQLScsfRZI1d4fC1FFYDv9w9uVqKkxaqr6CNgP\\_oqhcdGCM7lyVHw/viewform](https://docs.google.com/forms/d/e/1FAIpQLScsfRZI1d4fC1FFYDv9w9uVqKkxaqr6CNgP_oqhcdGCM7lyVHw/viewform)

Cost: \$68 for members / \$78 for non-members / \$30 for students.

When: Nov 11th 2023 10am - 3pm

Lunch will be at the FloodZone Brewery, only 5 minutes away. <https://www.floodzonebrewery.com/> Meet at 10am or earlier at the Floodzone Brewery to carpool to the first field site.

Where – Just south of Union Bridge, MD (along the Frederick and Carrol County boundary)

Meet at 10am at the Floodzone Brewery to carpool to the first field site.

2 field sites – First one off Clemsonville Rd and one off Molasses Rd

The first one, at 10am, take route 75 south and turn left on Clemsonville Rd. will be at <https://maps.app.goo.gl/VZnBE1Q7i5mHsaEX8>

**Future articles etc.,**

*Pedologue* needs articles, pictures, poems, cartoons, letters to the editor or other things soil scientists and/or other readers may be inspired to submit. Please submit such items to the editor (preferably to [DelvinDel@aol.com](mailto:DelvinDel@aol.com), alternatively [dsf@umd.edu](mailto:dsf@umd.edu)). Be an author, support your newsletter! It's a way to promote your work, our community, and things we all need to know about soils and the environment.

<b><u>2023 MAPSS Officers:</u></b> President: David Ruppert Past President: Ben Marshall President Elect: Josh Stallings Vice President: Gary Jellick Treasurer: Sarah Roberts Secretary: Jenwei Tsai Member at Large to serve 1 year: Evan Park Member at Large to serve 2 years: Jim Leonard Ex officio Member: Phil King	<b><u>Board of Directors</u></b> Jim Brewer to serve 1 year Diane Shields to serve 2 years Annie Rossi to serve 3 years <b><u>Chairs of Standing Committees</u></b> Finance: Vacant Constitution and By-Laws: Gary Jellick Membership and Ethics: Nominations: Ben Marshall Education and Public Relations Delvin Fanning Certification Vacant
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**Editor's Comments:** For this issue I had hoped to complete a description of another monolith of the University of Maryland Collection, want to be Museum. A draft for the Kenilworth landfill monolith, for that soil from Washington DC completed by students as part of a term paper project in 1973, 50 years ago, during the DC soil survey has been completed. A presentation by Ed Landa and me with Margaret Boozer of Red Dirt Studio and others was done employing this monolith at the Smithsonian African American Museum in DC in September, but I have decided to wait until the next issue of *Pedologue* that I hope will be completed this 2023 year after the MAPSS field day on manganiferous soils on Saturday, November 11, before putting this in *Pedologue*.

I have signed up to attend the Nov. 11 outing, as I hope many others have too. Hope to see you there.

The NE regional collegiate soil judging contest was early this year, September 29<sup>th</sup>. The two universities from which MAPSS has several members, and from which several students are active, did well, with the University of Delaware having the first place team with Univ. of Maryland 3<sup>rd</sup>, both qualifying to participate in the 2024 National Contest in Iowa in coming April as described in more detail in stories in this issue by coaches of the teams. Many thanks to all who participated and for the stories and pictures for publication.

To complete this issue, I have added a story about new Phriends of Phragmites from the state of Queensland in Australia. They have helped to renew my interest in Phragmites. I have been thinking for several years that MAPSS should lead an organizational meeting for this organization in a Sea of Phragmites somewhere sometime, anybody else up for that. It might be a place to hide out from all the troubles of the world, but I hope we won't be driven to have to eat phragmites, as I have heard that goats do if they are hungry enough.

**The University of Delaware Soil Judging Team won first place overall in the 2023 Northeast Soil Judging Regionals competition** hosted by Penn State University in Clearfield, PA against eight other universities and a total of thirteen teams. **See a picture of the team on the next page.** Every member of the UDE team placed in the top 30 out of 63 students for the Individual Judging with Bethany Knutsen coming in second overall. The team came in first for the Group Judging, demonstrating a high level of teamwork and organizational skills. Contest results for the top seven teams are presented in the following table.

School Rank	Team	Best of 3 Individuals	Group Total	Grand Total
1	Delaware	2620	461	3081
2	Del Val A	2617	434	3051
3	Maryland A	2622	400	3022
4	Rhode Island	2610	407	3017
5	Maryland B	2617	398	3015
6	Bloomsburg	2481	452	2933
7	Penn State A	2413	425	2838

Soil judging is an undergraduate collegiate activity affiliated with the American Society of Agronomy (ASA) and the Soil Science Society of America (SSSA). Each fall, college and university soil judging teams compete in a regional competition.

Institutions around the country take-turns hosting regional and national competitions since 1961. The 2023 NE Regional Collegiate Soils Contest was hosted by Penn State University and was in Clearfield or Centre County, PA.

Soil judging involves learning the field application skills of soil science: soil morphology, genesis, classification, and interpretation. Soil science is a diverse field with approximately six sub-disciplines (different however interconnected): soil chemistry and mineralogy, soil physics, soil biology and ecology, soil fertility and nutrient management (agronomy), soil and land use management, and soil morphology, genesis and classification.

The National Competition will be held from April 21<sup>st</sup> to April 26<sup>th</sup>, 2024 in Ames, Iowa hosted by Iowa State University. The team is thrilled to represent the Northeast Region alongside Delaware Valley University, University of Maryland, and Penn State University.

Editor’s additional Comment: This article (above and continued on next page) is by the University of Delaware’s team coach, Jenwei Tsai [jtsai@verdantas.com](mailto:jtsai@verdantas.com) in collaboration with their coach Phil King [philip.king@de.usda.gov](mailto:philip.king@de.usda.gov) with edits by Martin Rabenhorst and Del Fanning.



Pictured left to right: Coach, Phil King, State Soil Scientist of DE and MD; Coach, Jenwei Tsai, Project Scientist of Verdantas; Carina Christenbury, Environmental and Resource Economics; Joseph Dagostino, Plant Science; Brielle Carter, Agriculture and Natural Resources; Carter DiRado, Plant Science; Bethany Knutsen, Plant Science. Photo Credit: Dr. Jaclyn Fiola, Delaware Valley University.

## Maryland Soil Judges Head to the Nationals, by team coach Martin Rabenhorst, [mrabenho@umd.edu](mailto:mrabenho@umd.edu)

The Maryland soil judges placed 3<sup>rd</sup> overall among a field of 13 teams from nine universities at the NE regional soil judging competition on Friday September 29, 2023. This qualified the University of Maryland (UMD) to represent the NE region at the 62<sup>nd</sup> National Soil Judging Competition to be hosted by Iowa State University next April. This year's UMD squad of judges included five veterans and 10 brand new judges. Maryland had four individuals among the top 10 (Alex Quigley – 4<sup>th</sup>; Andrew Weiss – 6<sup>th</sup>; David Hutch – 8<sup>th</sup>; Jason Manzon – 9<sup>th</sup>) and another 3 among the top 15 (Gina Jacob – 11<sup>th</sup>; Gabe Acevedo – 12<sup>th</sup>; Ellie Rogers – 15<sup>th</sup>) which helped UMD move ahead of the Univ. of Rhode Island (4<sup>th</sup> place) and qualify for the national competition. The Univ. of Delaware finished in 1<sup>st</sup> place with Delaware Valley Univ. close behind in 2<sup>nd</sup> place. Also participating were Bloomsburg Univ., Univ. of Pittsburgh Johnstown, Penn State Univ., Brooklyn College and Alfred Univ.

This year's contest (hosted by Penn State Univ.) was held in the vicinity of Clearfield, PA where soils were mostly formed in such parent materials as shale and sandstone residuum and colluvium, but also included anthropogenic soils formed in strip mine spoil (human transported materials). In the field, students mostly saw Ultisols and Entisols, and fragipans were an ever-present challenge. A soil with a shallow, intact coal seam was a surprise and interesting twist in one of the practice pits. The contest itself was held at Simon B. Elliot State Park.

Other top 10 individual finishers included representatives from the Univ. of Rhode Island (1<sup>st</sup>, 7<sup>th</sup>), Univ. of Delaware (2<sup>nd</sup>), Penn State Univ. (3<sup>rd</sup>), and Delaware Valley Univ. (5<sup>th</sup>, 10<sup>th</sup>) with individual scores tightly grouped. In the end, the group judging portion seemed to separate the top teams. This year's UMD team was coached by Dr. Martin

Rabenhorst (ENST) with assistant coaches: Grace Bodine (ENST, MS student) and Jocelyn Wardrup (ENST PhD student).

The 62<sup>nd</sup> (2024) National competition will be hosted by Iowa State Univ. and will be held the week of April 21-26 in the vicinity of Ames, Iowa. The Terrapin Judgers will take a little time off this fall before they jump back into preparations for the Mollisols of Iowa in an attempt to defend their reign as 2023 National Champions. UMD extends a special thanks to Dr. Drohan (Penn State Univ.), Soil Hub (Michael Callahan) and the PA Association of Professional Soil Scientists (PAPSS) for making this regional contest possible.



Terrapin soil judges qualify for the nationals – heading to Iowa. Front Row: Jocelyn Wardrup (Asst. Coach), Alex Quigley (4<sup>th</sup>), Nicko Kioutas, Jason Manzon (9<sup>th</sup>); Middle Row: Grace Bodine (Asst. Coach), Samantha Chang, Rachel Hillman, Violet O’Neil, Gina Jacob (11<sup>th</sup>), Cole Chapman, Ellie Rogers (15<sup>th</sup>), Spencer Goldberg; Back Row: Kelsey Genovese, Kate Latham, Gabe Acevedo (12<sup>th</sup>) Andrew Weiss (6<sup>th</sup>), Martin Rabenhorst (Coach), David Hutch (8<sup>th</sup>).

## **NEW FRIENDS OF PHRAGMITES IN QUEENSLAND, AUSTRALIA, by Del Fanning**

**For this story, starting with a picture of these wonderful new Phriends, not, at least yet, MAPSS members, some of whom may be there for Pedologue readers to meet if/when they attend the next, the 10<sup>th</sup>, International Acid Sulfate Soils Conference in Sweden in 2025 if/when it takes place; Go to the next page.**



Picture above is of new Phriends of Phragmites in Queensland, Australia wearing tee shirts that they now sometimes wear in presentations they make on *The Queensland Acid Sulfate Soil Technical Manual, Soil Management Guidelines* (version 5, soon to be released, web address for version 4.0, released 2014 here <file:///C:/Users/12022/OneDrive/My%20Life/Documents/acid%20sulfate%20soils/queensland-ass-,management-guideline-2014.pdf>) and other topics. These lovely ladies, who supplied this picture are: Sue-Ellen Dear, Senior Land Resource Officer Nambour, on the right  
 Kristie Williams, Land Resource Officer Toowoomba, on the left  
 Angus Mcelnea, Senior Scientist Brisbane, in the middle with too small tee shirt  
 Sue-Ellen and Kristie are with the Queensland Department of Resources, whereas Angus is with Queensland Department of Environment and Science, Science Division.

As a result of my (Del's) presentation at the 9<sup>th</sup> International Acid Sulfate Soils Conference in Adelaide, Australia, in March, 2023, I came in contact with scientists from many other parts of the world including some from the state of Queensland in Australia, who were especially interested in what I had to say about the use of Phragmites in the reclamation of acid sulfate soils in dredged materials by a scheme of "letting nature take its course" and the fact that Phragmites grow on active acid sulfate soils with healthy roots in *sulfuric horizons* by *Soil Taxonomy* although other parts of the overall root system may have to be in *sulfidic materials* or other soil materials with higher pH (Fanning and Burch, 2000). When they heard that I had some P of P tee shirts showing this, they expressed interest in having some, so after I got home, from my leftover supply from after the 8<sup>th</sup> International Acid Sulfate Conference that we hosted at the University of Maryland in 2016, I sent them some of various sizes. As the picture shows, they are being worn. The promotion of Phragmites reeds goes on worldwide even though P of P is still not an official society and may never become one. But the plant goes on helping to take CO<sub>2</sub> out of the atmosphere and to put O<sub>2</sub> in while promoting the ripening of soft sediments and dredged materials, for which it is deliberately used in the reclamation of polders in the Netherlands as has been pointed out by Leen Pons and others; in spite of being considered an undesirable invasive plant in some places, including the states of Maryland and Delaware in the U.S., and a serious weed, which it can be, as noted by sugar cane

farmer, and promoter of research on coastal acid sulfate soils, Robert Quirk in northern New South Wales in Australia.

For those who may wish to know more about Phragmites growing on active acid sulfate soils in dredged materials and for a closer look at the drawing of the Phragmites ecotessera represented in the drawing on the tee shirt, the abstract for the Fanning et al. paper presented at the 8<sup>th</sup> IASSC in 2016 is reprinted on the following pages of this issue of Pedologue

Reference.

Fanning, D.S. and S.N. Burch. 2000. Coastal acid sulfate soils. Pages 921-937 In R.I. Barnhisel, W. L. Daniels, and R. G. Darmody (Editors). Reclamation of Drastically Disturbed Lands. Agronomy Monograph 41. American Society of Agronomy, Madison, WI, USA.

## Phriends of Phragmites (abstract for 8<sup>th</sup> IASSC paper presented 7/19/2016)

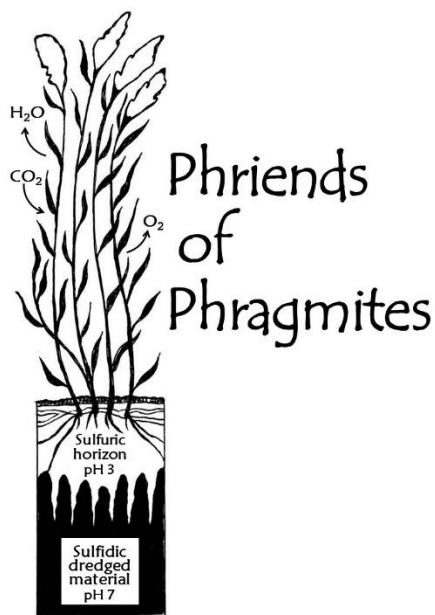
Fanning, Delvin S.<sup>1</sup>, Baldwin, Andrew H.<sup>1</sup>, Haering, Kathryn C.<sup>2</sup>, McMullen, Maura<sup>3</sup>

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In several publications (e.g. Fanning and Burch, 2000) the formation of a Phriends of Phragmites Society has been proposed to promote the use of the common reed, *Phragmites australis* in a reclamation strategy called “letting nature run its’ course” for acid sulfate soils on recently deposited sulfidic DM (dredged materials) in upland, usually diked in, deposition sites. In October 2015, upon visiting the HMI (Hart-Miller Island) deposition site for the first time in many years, to plan the 8<sup>th</sup> IASSC pre-conference tour there, the senior author was greatly disappointed to find that the opposite of the strategy of encouraging *Phragmites* has been practiced at that location for several years; instead, naturally invading *Phragmites* there have been driven back and reduced in their abundance by the use of herbicides and other practices, which has resulted in large parts of the land there presently lying barren or only covered with sparse, hardly noticeable, vegetation of little biomass. It was learned that those managing the HMI and other DM deposition sites are required by state-mandated regulations to control *Phragmites* at their sites by the use of herbicides, apparently at HMI largely by aerially-applied.Rodeo. Learning these things stimulated us to renew our efforts to promote Phriends of Phragmites. Several attendees after a seminar about *Phragmites* by Baldwin in November, 2015, agreed to support our PofP efforts by signing to purchase tee shirts promoting P of P. Katie Haering, known for her drawing skills was recruited to do a drawing (shown below) for the tee shirt, representing *Phragmites* growing on an active acid sulfate soil, ideally a *Hydraquentic Sulfaquept* by *Soil Taxonomy* developing in sulfidic dredged materials, for the tee shirt.



*Phragmites* are especially useful on these soils, which initially, following the deposition of the dredged materials, are totally un-vegetated. Thus on these soils *Phragmites* do not displace other plant species (a complaint of some Phoes of Phragmites) because other species are not present. Essentially no plants, including *Phragmites*, invade and grow upon these soils by seeds that fall upon the soils once they have acidified upon the oxidation of sulfides because of their ultra-acidity, e.g. pH <3.5, of surficial *sulfuric horizons* that induce high levels of soluble aluminum in the soils. However, *Phragmites* do invade and colonize these soils by rhizomes running out upon them from the edges of the DM deposition areas where we think part of the root systems of the plants are in soil materials with less extreme chemical conditions, and once these plants do establish on the *sulfuric horizons*, healthy roots of *Phragmites* have been observed in *sulfuric horizons*, supporting above ground portions of the plants 2-3 meters tall. The picture shown on nest page (finger nail about 12 mm wide) shows a portion of a *sulfuric horizon* of an 8 year old soil in DM that had a pH, measured in water, of 2.8. with cross-section of a large hollow *Phragmites* root, with smaller channels in its walls, close to the top of the photo, above and to the right of the finger. A description of this soil that mentions the presence of common to many coarse and fine roots in this *sulfuric horizon* appears in Appendix A, pages 76-77 of Maura McMullen’s 1984 M.S. thesis (Mc Mullen 1984). The finger is pointing to the yellow mineral jarosite on a prism face of the soil, which also had concentrations of iron oxyhydroxides (possibly schwertmannite) on the walls of pores and channels and dark gray interiors of structure peds, shown where the ped

faces were broken away, and also fine roots, some of which were observed to go into deeper black sulfidic materials where the pH was about 7, thus such a possibility is shown in the drawing.



We know that *Phragmites* grow on many other kinds of soils in addition to acid sulfate soils developing in dredged materials, including some where they may be responsible for pushing out more desirable plants. We also know that there are native to North America, sub-species *americanus* as well as so-called foreign-invasive *Phragmites* that apparently may grow larger than the native ones. Baldwin and others in the UM ENST Department have some research projects involving graduate students who are studying the various subspecies and conditions that may favor one vs. the other. However, for the promotion of the ripening of soils on soft newly deposited dredged materials, *Phragmites* are special plants for utilization during the ripening and initial development of the soils, like they have been, used in the Netherlands, where they are sometime planted on newly exposed land, polders, where the sea has been pushed back to make new land for agriculture, to enhance the drying out and ripening of the soils..



At first only water, H<sub>2</sub>O, by evapotranspiration, was shown by chemical symbols leaving the plants in the drawing as a main benefit of the *Phragmites*, in the physical and chemical ripening of the soft soils at DM deposition sites. They help get rid of the excess water, like at the Hart-Miller Island site, meaning that less water in liquid form is released to surrounding water ways. Baldwin suggested that we also show CO<sub>2</sub>, which is taken up by the *Phragmites* and O<sub>2</sub> which is released by photosynthesis, like it is with other kinds of plants. The large biomass produced by the *Phragmites*, is a major benefit to the soils in terms of additions of organic matter to the soils and in taking the heat-trapping CO<sub>2</sub> from the atmosphere etc. Andy suggested that we show O<sub>2</sub> coming out of the roots, where it hastens the oxidation processes in the soil. Katie could not find room in the diagram to show this. Perhaps that can be added in future updates/revisions. Also not shown, although implied, is that *Phragmites* take up P and N, which lowers the amount of these elements that enter waterways and contribute to

eutrophication of waters of the Chesapeake Bay. All of these benefits and others (e.g. the beauty of *Phragmites* with benefits to many forms of wildlife – red-winged blackbirds and other birds and muskrats that build their houses using *Phragmites*) are more reasons why we encourage people in all walks of life to be Phriends of *Phragmites*. Supporters will be offered an opportunity to purchase tee shirts at this 8<sup>th</sup> IASSC, perhaps at a poster version of this paper if that gets completed. PofP is not yet an official Society. Supporters are asked to add their names to a list of those interested in becoming members and to contribute their ideas for goals of the organization, of which we hope to have a draft version ready to distribute at the conference.

#### References:

Fanning, Del. 2015. Phriends of *Phragmites*. *Pedologue*, Fall 2015 issue, Pages 5-8.

<http://www.midatlanticsoilscientists.org/pedologue/> .

Fanning, D. S. and S. N. Burch. 2000. Coastal acid sulfate soils. Pages 921-937 In R. I. Barnhisel, W. L. Daniels, and R. G. Darmody (Eds.) *Reclamation of Drastically Disturbed Lands*. Agronomy Monograph 41, American Society of Agronomy, Madison, WI

McMullen, M. C. 1984. Adaptability of selected conservation plant species in relation to pH and electrical conductivity of active acid sulfate soils in Baltimore Harbor dredged materials. M.S. Thesis. University of Maryland, College Park, MD.

**Editor's Comment: A few typo and other corrections have been made in this abstract reprint compared to the originally published version for the 8<sup>th</sup> IASSC.**