Society of Wetland Scientists South Central Chapter 2024 Annual Meeting

Louisiana State University, Baton Rouge, LA

October 17-19, 2024

THANKS to all of our meeting sponsors!

Gold Sponsor: Coastal Environments, Incorporated

COASTAL ENVIRONMENTS, INCORPORATED

Contact: Randy Sunde, rsunde@coastalenv.com

Silver and Bronze Sponsor: US Army Engineer Research and Development Center

ERDC

ENGINEER RESEARCH & DEVELOPMENT CENTER

Contact: Jacob Berkowitz, Jacob.F.Berkowitz@usace.army.mil

THANKS to all of our meeting sponsors!

Student mixer sponsor: Delta Land Services

Contact: Jim Bergan, codi@deltaland-services.com

Meeting lunch sponsor: Plummer

Contact: Karen Kroesen, kkroesen@plummer.com

Swamp tour field trip sponsor: HDR

Contact: Amber Robinson, amber.robinson@hdrinc.com

Thanks to our sponsors!

Meeting lunch sponsor: Resource Environmental Solutions (RES)

Contact: Guy Patout, GPATOUT@RES.US

Meeting Coffee Break Sponsors:

Contact: Jodie M. Burns, jodieburns@cattailsenvironmental.com

Contact: Chad Copeland, chad@rangerenv.com

Contact: Claire Randall, claireran87@gmail.com

Welcome:

THANK YOU for registering for the SWS South Central Chapter Meeting at Louisiana State University in Baton Rouge, LA! We have two days full of amazing presenters on Thursday, October 17, and Friday, October 18, along with an optional Atchafalaya Basin swamp boat tour field trip and catered lunch on Saturday, October 19. This meeting is being conducted in support of SWS South Central Chapter members, the LSU SWS Student Chapter, and students, academics, practicing professionals, and members of the public interested in wetlands and relate topics.

The Chapter thanks Louisiana State University, the LSU College of the Coast and Environment, and The LSU Center for River Studies for hosting this year's meeting. We also thank our incredible sponsors, Alexis Beaud who leads the LSU Student Chapter, Neely Martin-Walker and all the students, staff, and volunteers who made this event possible.

Registration webpage: https://members.sws.org/ap/Events/Register/xRF9G3bUMCYC7

Program overview:

Time	Activity	Location
	Thursday October 17	
700-0900	Registration and continental breakfast	Rotunda and conference room
900-920	Welcome from the Dean Willson and SWS officer introductions	Auditorium
920-1000	Plenary - Ms. Robin Whitfield	Auditorium
1000-1030	Coffee break	Rotunda and conference room
1030-1210	Technical session 1	Auditorium
1210-120	Catered lunch	Rotunda and conference room
120-150	Society of Wetland Scientist diversity, equity, and inclusion initiative	Auditorium
150-300	Technical session 2	Auditorium
300-315	Break	Rotunda and conference room
315-400	WOTUS and Sackett: Does the Law Care about Hydrology or Wetlands Science?	Auditorium
400-530	Poster session with snacks, drinks	Rotunda
	Friday October 18	
700-0900	Registration and continental breakfast	Rotunda
730-0830	SWS SouthCentral Board meeting - Board members only	Conference room
900-920	A brief history of wetland research at LSU from the Associate Dean White	Auditorium
920-1000	Plenary - Dr. Melissa Baustian	Auditorium
1000-1030	Coffee break	Rotunda and conference room
1030-1230	Technical session 3	Auditorium
1230-145	Catered lunch and South Central Chapter meeting - all wecome to attend	Rotunda and conference room
145-300	Interactive career panel and professional networking	Auditorium, rotunda, and conference room
300-430	Tour of MS River model and LSU Center for River Studies	LSU Center for River Studies
430-630	Student awards, caterered cajun dinner, reception	LSU Center for River Studies
	Saturday October 19	
0900-1130	Swamp tour, Optional Event	McGee's Swamp Tours, Henderson LA
1130-100	Catered lunch	McGee's Swamp Tours, Henderson LA
100	Adjourn	

Notable presenters:

Dr. Clint Willson will help us kick off the meeting and welcome attendees to the LSU campus. Dr. Willson is the Dean of the College of the Coast and Environment, and the Director of the LSU Center for River Studies. He has received numerous awards for his research in the fields of physical and numerical modeling of river flows and sediment transport. https://lsu.edu/river/

Dr. John White will provide a brief history of wetlands research at LSU to begin the second day of the meeting. Dr. White is the Associate Dean for Research in the College of the Coast and Environment and a Professor in the Department of Oceanography & Coastal Sciences. He is an internationally recognized expert in the field of wetland biogeochemistry. https://faculty.lsu.edu/whitelab/index.php

Plenary speakers:

Plenary speaker and conference Artists in Residence Robin Whitfield will present "A Mississippi Swamp Story" describing her 25-year relationship with the Chakchiuma Swamp in Grenada Mississippi. The presentation will communicate the intersection of art, community, and wetland conservation. Through her work as an artist and non-profit director Robin finds unusual ways to connect people to bottomland hardwood forests.

Dr. Melissa M. Baustian is an Ecologist at U.S. Geological Survey Wetland and Aquatic Research Center. Dr. Baustian studies how coastal ecosystems function under the influence of nutrient enrichment, climate change, and restoration. Her research assesses current and future functions of nutrient cycling, trophic dynamics, and carbon sequestration in pelagic, benthic, and vegetated habitats. Her talk "Examining the Bottom of Food Webs to Assess Ecosystem-wide Impacts of Restoration in Coastal Louisiana" will be of interest to a wide range of students and professionals as it weaves together coastal ecology, diverse floral and faunal interactions, and restoration science.

South Central Chapter Board Members:

This is YOUR Society, and engaging with our Officers and Board Members is one of the best ways to ensure the chapter is providing you with valuable content, opportunities, and activities. Get to know you Officers and Board Members, and consider volunteering to serve on the Board to help shape the future of YOUR Society!

President – Jessica Brumley, 2023-2025 - jbrumley@ecok.edu

Dr. Brumley is an Assistant Professor in the Department of Biological and Environmental Sciences at East Central University in Ada, Oklahoma. Jessica studies wetland ecosystem services and health, and remains active within SWS South Central Chapter.

Immediate Past President – Jodie M. Burns, 2023-2025 - jodieburns@cattailsenvironmental.com

Ms. Burns is the owner of Cattails Environmental, LLC - an environmental consulting firm that assists clients in meeting federal and state environmental laws by performing wetland delineations, CWA 401/404 permitting activities, mitigation services, endangered species surveys, and stream-related work. She is an Arkansas native who has 16+ years of environmental consulting experience and two Master's degrees who works primarily in Oklahoma, Arkansas, Missouri, and Kansas with occasional forays into Texas, Mississippi, Iowa, Minnesota, and Louisiana. Ms. Burns enjoys giving presentations on the complexities of the Clean Water Act, implementation of any current definitions of Waters of the U.S. and convoluted court cases that influence those issues. Residing in Bentonville, AR, with her husband of 31 years, four sons, a cat, and a dog. Her top two hobbies are gardening and quilting.

President-Elect – Eric Fuselier, 2023-2025 - ericfuse81@gmail.com

Eric Fuselier, PWS is an environmental consultant at Olsson in Fayetteville, AR and has been a member of SWS since 2016. He has served on the executive board for the South Central Chapter since 2019 and is currently serving as the President-Elect.

Treasurer – Laura Duffie, 2021-2025 - lauraduffie314@gmail.com

Laura Duffie, AWB, PWS serves as an Environmental Scientist with HDR in San Antonio, Texas. Prior to HDR, Laura gained previous consulting experience working for Whitenton Group Environmental Consultants. Laura has been an active member of the Society of Wetland Scientists since 2012 and has served on the SWS South Central Chapter Board of Directors as the elected Treasurer since 2021. She is delighted to reconnect with everyone in Baton Rouge!

Secretary – Jacob Berkowitz, 2023-2024 – Jacob.F.Berkowitz@usace.army.mil

Dr. Jacob Berkowitz is a Senior Research Soil Scientist at the US Army Engineer Research and Development Center, Team Leader for wetlands research, and an LSU Adjunct faculty member. His research focuses on wetland assessment, and improving natural resource management via teaching and outreach (Jacob.F.Berkowitz@usace.army.mil).

Executive Board:

Gary Ervin, 2021-2025 - gervin@biology.msstate.edu

Gary Ervin is a Plant Ecologist in the Biological Sciences Department at Mississippi State University. He has around 30 years of experience studying wetland plants and has served many roles in SWS, including three terms as an Executive Board member for the South-Central Chapter.

Claire Randall, 2022-2024 - claireran87@gmail.com

Claire Randall is a wetland scientist based in Houston, TX, with much of her work occurring in SE TX and LA. Before she got involved in wetlands work, she was mostly an Ornithologist and was focused on Avian Studies. In her spare time, she loves traveling, reading, and cooking

Mark Ford, 2022-2024 - bultongue@yahoo.com

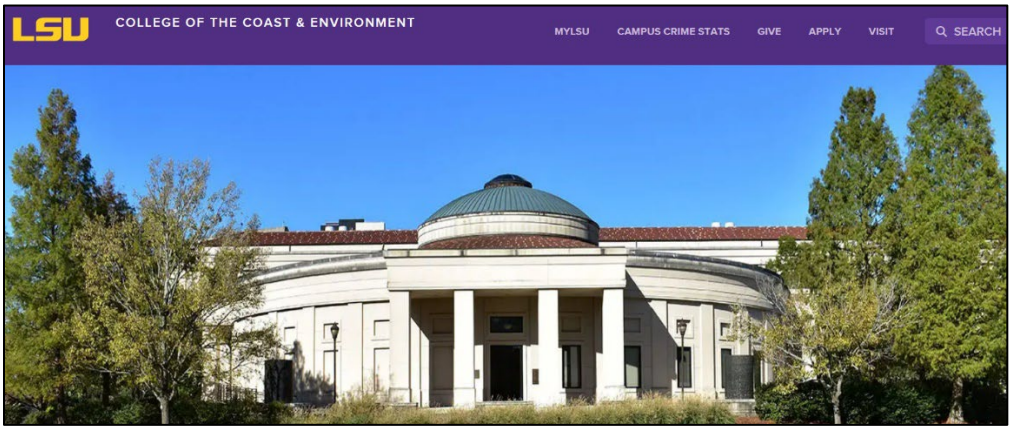
Dr. Mark Ford is the Chief of Science and Resources at the National Park Service Padre Island National Seashore in Corpus Christi, TX. Prior to that, Mark worked as a Regional Wetlands Ecologist across a wide range of National Parks. Mark has remained active within the Chapter and previously served on the Board.

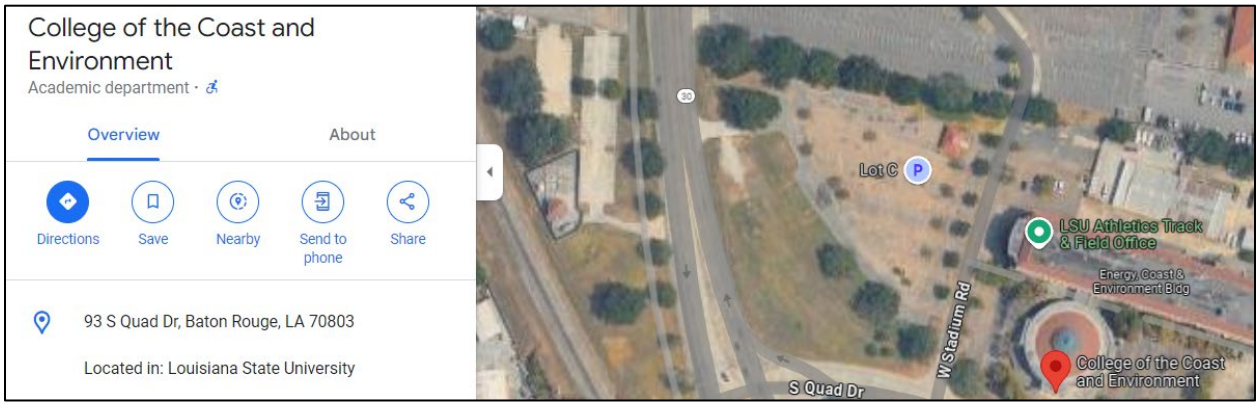
Kara Vick, 2023-2025 - kara.d.vick@usace.army.mil

Kara Vick is the Team Lead for the Army Corps of Engineers, Compliance Branch in Galveston District since 2022 and started working for the Corps in 2008. Prior to working for the Corps, she spent 7 years in state government, involving an internship for Texas Parks and Wildlife, a Coastal Biologist for Texas General Land Office (Asset Inspections), and an Environmental Investigator for Texas Commission on Environmental Quality (Waste Section). Kara graduated from Texas A&M University at College Station with a BS in Wildlife Management and Fisheries, emphasis in Ecology. She graduated from Texas A&M University at Corpus Christi with a MS in Environmental Science.

Locations:

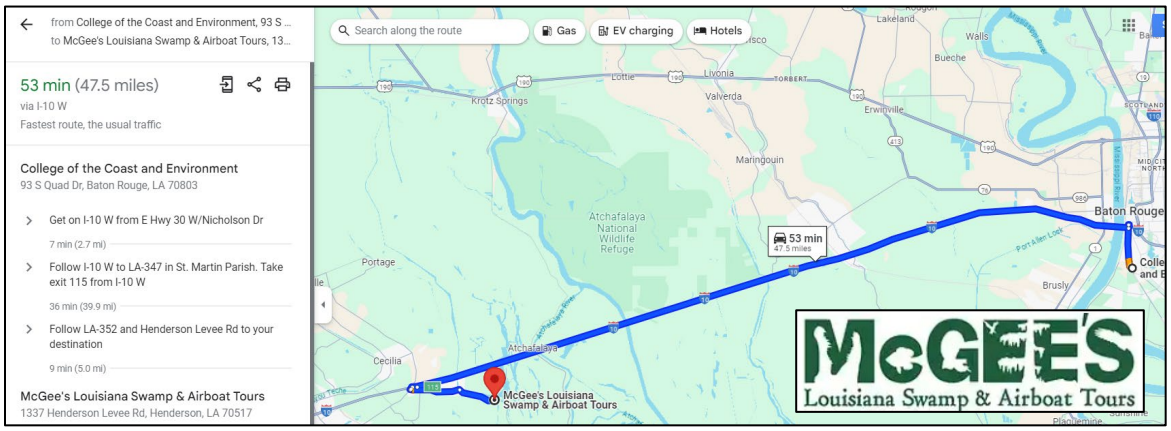
1) Meeting - The majority of meeting activities will occur on the LSU main campus at the College of the Coast and Environment building located at 93 S Quad Dr, Baton Rouge, LA 70803. Directions to the building can be found here https://www.lsu.edu/cce/about/directions.php. Parking is located in lot C directly to the west of the venue. Continental breakfast, coffee breaks, and regionally inspired Louisiana meals will be provided throughout the meeting.





2) Awards ceremony, MS river model tour, and Friday social - Following the technical sessions and workshops, the group will gather at the LSU Center for River Studies to tour the world class, one of a kind lower Mississippi River model and interpretive center (https://lsu.edu/river/) located at 100 Terrace Ave, Baton Rouge, LA 70802. Activities will include tours guided by professional wetland restoration facilitators, recognition of award winning student presenters, and a social with a catered dinner highlighting local Cajun cuisine. A map with directions from the LSU main campus to the facility is provided below.

3) Swamp tour, optional activity – A tour of the internationally recognized Atchafalaya swamp will provide opportunities for education, networking, and FUN! The group will convene at 0900 Saturday October 19 at McGee's Louisiana Swamp & Airboat Tours (https://www.mcgeesswamptours.com/) located at 1337 Henderson Levee Rd, Henderson, LA 70517. The tour is ~50 minutes west of the LSU main campus. A catered lunch (think Po-boys, etc) will follow the tour.



Detailed Schedule:

Thursday October 17

700-0900 Registration and continental breakfast

900-920 Welcome from the Dr. Clint Wilson Dean of the LSU College of the Coast and Environment, SWS officer introductions

920-1000 **Plenary 1 – A Mississippi Swamp Story**

Ms. Robin Whitfield

https://www.robinwhitfield.com/

Plenary speaker and conference Artists in Residence Robin Whitfield will present "A Mississippi Swamp Story" describing her 25-year relationship with the Chakchiuma Swamp in Grenada Mississippi. The presentation will communicate the intersection of art, community, and wetland conservation. Through her work as an artist and non-profit director Robin finds unusual ways to connect people to bottomland hardwood forests.

1000-1030 Coffee break

1030-1200 Technical session 1

1030-1050 **Dredged Canals, Wetland Loss, and Legacy**

R. Eugene Turner, LSU, Oceanography and Coastal Sciences, Elijah Ohimain, Niger Delta University, Dept. Microbiology, Nigeria

euturne@lsu.edu

The direct effects of converting coastal wetlands to open water by dredging them can be magnified by indirect effects. For example, dredged canals allow for recovery of mineral fluids 1000s of m belowground which may induce geological subsidence or faulting; the dredged material deposited at the surface creates levees that redirect overland water flows. These indirect factors may stress wetland plants enough so that additional wetland habitat is converted to open water as a result of longer intervals of wetland soil waterlogging and drying, sulfide toxicity, less organic matter and sediment accumulation, and greater erosion. We quantified the indirect effects by demonstrating a robust dose-response relationship between coastal land loss and canal density in the Mississippi and Niger river deltas over 5 decades. Importantly, the ratio of land loss to canal area increases with time as a legacy effect. Surface impediments to water movements rather than belowground subsidence is the dominant causal factor. We also found that flood protection levees on the main river channel did not significantly magnify the effect of dredging on wetland loss. The cumulative effect of these direct and indirect consequences in coastal Louisiana are enormous and continuing, equaling many tens of billions of dollars annually. Understanding these effects supports the rejection of a hypothesis that regional river channel flood protection levees or fluid withdrawal is of greater importance than the local changes in wetland hydrology.

Wetland restoration/mitigation of dredging impacts on these two coasts can be implemented at a relatively low cost and quickly if this paradigm of the causes of coastal wetland losses is adopted.

1050-1110 **Floodplain Forest Tree Growth in Relation to Baseflow and Stormflow in Local Rivers**

Clay Tucker - University of Southern Mississippi, School of Biological, Environmental, and Earth Sciences, 118 College Drive, Hattiesburg, MS 39406

clay.tucker@usm.edu

Annual growth rings of Taxodium distichum (i.e., baldcypress) can be used as a proxy for long-term and extreme-event hydroclimate reconstruction. This research indicates that T. distichum tree-ring width data from the Santee River explained higher variance of instrumental baseflow than total streamflow or stormflow. Our reconstruction reveals a long-term increase in baseflow over the past millennium. Additionally, in T. distichum, false ring production is usually a result of increases in mid-growing season water availability. False ring production in T. distichum has previously been correlated with summer streamflow, the season when tropical cyclone precipitation (TCP) is highest. This research indicates that a high prevalence of false rings in particular years coincides with summers of anomalously high precipitation, anomalously low temperatures, and a positive phase of the North Atlantic Oscillation. In fact, 77% of these years occur in seasons when there is heavy tropical cyclone activity near sample sites. Results for recent high levels of baseflow in the Santee River and an increase through time in TC-caused stormflow may be connected to the position of the Bermuda subtropical high and the North Atlantic Oscillation, building a foundation to use T. distichum tree-ring ring records as robust baseflow and stormflow proxies with hydroclimate reconstruction potential.

1110-1130 **Options and opportunities for carbon accreditation methodologies and standards in coastal Louisiana**

Tim Carruthers, The Water Institute, Baton Rouge, LA

tcarruthers@thewaterinstitute.org

Current restoration funding in coastal Louisiana, primarily from Deepwater Horizon oil spill settlements, will be fully committed by the early 2030s and additional funding sources are required for coastal restoration in Louisiana. The state of Louisiana tasked CPRA with investigating the viability of quantifying and accrediting net carbon flux from ecosystem restoration as sellable offsets onto the voluntary carbon market. Existing accreditation methodologies have not been successfully applied to coastal Louisiana's ecosystem restoration approaches or herbaceous tidal wetland types, primarily since it is not financially viable to apply available accreditation methodologies. This work synthesizes the history and status of carbon legislation and carbon science within Louisiana. It then summarizes carbon accreditation policies, legislation, and programs within other US states and federally. Additionally, available technical methodologies were synthesized to identify where there are opportunities to increase financial

viability. Although some form of update to existing blue carbon crediting methodologies, or additional methodologies (and/or standards) would be needed, it is considered technically feasible. Due to a strong legal and regulatory framework and baseline scientific data, Louisiana is well poised to update or develop the necessary standard or methodology for these wetlands. This presentation will summarize the key options available to CPRA and what it would entail to update or develop carbon accreditation methodologies or standards on the voluntary carbon market.

1130-1150 **Numerical modeling to compare net GHG flux from marsh restoration scenarios**

Hoonshin Jung, The Water Institute, Baton Rouge, LA

hjung@thewaterinstitute.org

In this study, numerical modeling was used to assess the net GHG flux changes from implementing proposed marsh creation restoration projects near Port Fourchon in coastal Louisiana. Net GHG fluxes were assessed for coastal habitats near Port Fourchon under differing future scenarios of future restoration actions. The ecosystem models indicate a continuous reduction in vegetated habitats within the study area over a 30-year period (2020 to 2050) due to subsidence and global SLR. Results indicate that even with modeled habitat changes between 2020 and 2050 the study area will continue to be a net GHG sink with or without restoration. Restoration efforts modeled were estimated to result in the area being up to 30% more of a GHG sink than future with no restoration, equating to an additional flux over 30 years of approximately -2.26 MMT CO_2e for PA2 (1,629 ha mix of mangrove and saline marsh) and -2.31 MMT CO_2e for PA3 (2,856 ha of mostly saline marsh). Future improvements based on new scientific information to reduce uncertainties by constraining the major assumptions, multipliers, and sensitivities in key equations, were identified.

1150-1210 **Quantifying Spatial and Temporal Uncertainty in Louisiana's Coastal Carbon**

Shawn Doyle, The Water Institute, Baton Rouge, LA

sdoyle@thewaterinstitute.org

The Louisiana coastal ecosystem is a critical carbon sink, but its future net carbon flux is uncertain due to various factors including land loss, response of plant communities, and methane emissions. To better understand the drivers of uncertainty and inform management decisions, we conducted a Sobol's sensitivity analysis to identify the most influential parameters and assumptions affecting net carbon flux estimates.

Our analysis examined uncertainties across multiple spatial and temporal scales, considering factors such as soil carbon loss from marsh collapse, methane emissions, and changes in plant productivity. We found that the relative importance of these uncertainties varies spatially and temporally. For instance, uncertainties related to land loss are particularly significant in coastal areas threatened by marsh collapse, while methane flux uncertainty becomes more influential in fresher and intermediate salinity

regions. Moreover, the time horizon considered impacts the overall uncertainty, with longer time scales projecting greater land loss and associated carbon implications.

By quantifying the contribution of individual uncertainties to the overall uncertainty in net carbon flux, our study provides valuable insights for policymakers and researchers seeking to develop effective strategies for mitigating climate change and protecting coastal ecosystems.

1210-120 Catered lunch

120-150 **A Reinvigorated Approach: diversity and inclusivity in our profession**

Join us and explore how SWS is modernizing our approach to DEI and DEI outreach. Discussion topics will include modern practices, DEI, diversity, workplace leadership, workplace inclusivity, and the recent activities of the SWS committee exploring these important topics.

Christina Omran, State of Florida, State Lands & Fish and Wildlife Conservation Commission, 620 S Meridian Street, TLH, FL 32399, Fellow Diversity Committee Member

Christina.Omran@Gmail.com

150-300 Technical Session 2

150-210 **Potential of watershed phosphorus loading and sediment legacy phosphorus on driving harmful algal blooms in a coastal estuary**

Lee Potter, Department of Oceanography and coastal science, 3251 ECE Building Baton Rouge 70803, John White, Department of Oceanography and coastal science, 3251 ECE Building Baton Rouge 70803

lpotte6@lsu.edu

Excess phosphorus loading to coastal systems has intensified in recent decades due to changes in land use, hydrology, coastal population increases, and degradation of wetland systems. The consistent increase of phosphorus concentrations in coastal systems is directly linked to the increased occurrence of harmful algal blooms (HABs). HABs in coastal estuaries deteriorate water quality through eutrophication, hypoxia, and fish kills, impacting the local human populations and fragile ecosystems. This study investigated the spatial patterns of sediment phosphorus within the Lake Pontchartrain estuary in southeastern Louisiana, subject to increasing HABs in its northern waters, where populations have grown in recent years. Sediment intervals of 0-5 and 5-10 cm across 160 stations of the 1,631 km2 estuary were sampled and analyzed for moisture content, bulk density, organic content, total phosphorus, carbon, nitrogen, and inorganic and organic total Phosphorus. Additionally, water samples were collected for nitrate, ammonia, and phosphorus from the five main tributaries of the estuary to assess the external input of phosphorus forms. The lake sediment was primarily inorganic P (averaging 93% of TP) and varied widely, ranging from 5.67- 757.31 mg kg-1 (median 408). The highest concentrations of sediment P were in the southwest regions

of the estuary with fine-grained silty-clay (129- 757 mg kg-1, median=460, with northern and northeastern portions being relatively low and predominantly sandy 5.67-481.68 mg kg -1 (median 264). While sediment P was low in the estuary's northern regions, the lake's tributaries delivered an average of 5 km3 of water annually with an annual load of 0.04 mg L-1 of dissolved bioavailable P, accounting for 55% of the total phosphorus load. These findings suggest that nutrient inputs from the northern tributaries are the source of P for HABs, as potential internal sediment P is primarily confined to the southern portions of the estuary.

210-230 **Does grain size matter?: A survey of natural and restored marsh soil characteristics**

Marina Howarth, Jacob Berkowitz, US Army Corps of Engineers, ERDC Environmental Lab, 3909 Halls Ferry Rd. Vicksburg, MS 39180

marina.c.howarth@usace.army.mil

Coastal marshes are a natural defense that develop on a variety of landforms and occur across a range of tidal regimes. Marshes evolve over time in response to changing sea level, sediment supply, vegetation community succession, anthropogenic perturbations, and other factors. These ecosystems provide an important defense for coastal communities by lowering flood risk and increasing resilience through reduced wave energy. However, many marshes experience degradation associated with erosion, decreased sediment availability, and storm damage. In response, coastal resource managers seek to restore and expand marshes to improve environmental outcomes, while delivering other benefits to coastal communities. In particular, the beneficial use (BU) of dredged sediments provides an option for marsh creation and restoration and supports the maintenance of economically essential navigation channels. The U.S. Army Corps of Engineers (USACE) recently introduced an initiative to increased dredged sediment BU from the current rate of 30-40% of the total dredged volume to >70% by 2030, further promoting marsh creation and restoration. Using dredged sediment that would otherwise be removed from the coastal zone protects critical infrastructure, military installations, and other assets from natural threats (e.g., storm surge and flooding). Yet questions persist regarding what types of BU sediments are appropriate for creation and restoration. In response, we review marsh soil characteristics based on a survey of existing literature. While this review is not exhaustive, our findings show no statistically significant difference between BU and natural marsh soil grain sizes, organic matter, and bulk density, and a large range of values across all marshes. These results promote the application of both fine and coarse textured dredged sediment to create and restore marshes. Our findings also suggest the need to match dredged sediments with naturally occurring marsh soils be deemphasized to further expand beneficial use projects and provide critical support for coastal communities.

230-250 **Intro to CRCL and its successes restoring and advocating in Coastal Louisiana**

Brett Pickett, Coalition to Restore Coastal Louisiana, 3801 Canal Dr. New Orleans, LA 70119

brett.pickett@crcl.org

Since the 1930's coastal Louisiana has lost 2,000 square miles of land. This is due to many reasons including the erecting of levees along the Mississippi, the digging of canals and channels through wetlands, oil spills, and more. As the coast erodes the state loses a vital buffer against major storms as well as crucial ecosystems that many people rely on for their lively hoods. In response to this crisis, the Coalition to Restore Coastal Louisiana (CRCL) was formed in 1988 to advocate for large scale state led coastal restoration efforts. While it remains primarily an advocacy organization, CRCL has taken up smaller volunteer based restoration projects throughout the state too. This includes planting over one million native trees and plants, and building 8,000ft of oyster shell reefs to enhance vulnerable habitats and drive public engagement in the issue of coastal land loss. This presentation intends to discuss CRCL's work through the org's data collection on its restoration projects. This was done primarily through analysis of the marine life present on its oyster reefs, and measuring the success rates of the org's planted trees. We hope this presentation will highlight the significance of small-scale restoration work, and the many ways that professionals and students can get involved in the land loss crisis through CRCL.

250-300 Technical session 2 - presenter panel discussion

300-315 Break

315-400 **WOTUS and Sackett: Does the Law Care about Hydrology or Wetlands Science? – An interactive panel**

Panelists:

Dr. Tom Douthat is an Assistant Professor in the LSU Department of Environmental Sciences. Dr. Douthat studies planning, land use change, space and policy, economic geography and development, economic, environmental governance, environmental policy, hazards, and environmental law, among other topics.

Contact: tdouthat1@lsu.edu

Jodie M. Burns is the Principal and Senior Scientist at Cattails Environmental, LLC. Ms. Burns has over 16 years experience working as an environmental consultant in wetlands (delineation, state and federal permitting, and mitigation project design) and environmental project management. She also serves on the Webinar Planning subcommittee of the SWS Education and Outreach Committee and the South Central Chapter Board.

Contact: jodieburns@cattailsenvironmental.com

Dr. Jacob Berkowitz is a Senior Research Soil Scientist at the US Army Engineer Research and Development Center, Team Leader for wetlands research, and an LSU Adjunct faculty member. His research focuses on wetland assessment, and improving natural resource management via teaching and outreach.

Contact: Jacob.F.Berkowitz@usace.army.mil

This interactive session will examine the implications of recent Supreme Court decisions to the Clean Water Act and Wetlands. Dr. Thomas Douthat will first review laws and court decisions related to wetlands, followed by input from a wetland scientist and private sector practitioner. The discussion will examine issues related to the Interstate Commerce Clause, Federal Statutes (e.g., CWA Sec. 404), agency responsibilities, wetland jurisdiction, SWANNC, Rapanos, WOTUS 2015, Clean Water Rule 2019, 2022 WOTUS, 2023 Sackett, and the post Sackett atmosphere. This interactive session is designed to incorporate audience perspectives, as we as SWS members and meeting attendees collectively seek to answer the question “So what is a jurisdictional wetland?”

400-530 Poster session with snacks, drinks

Categorizing CWPPRA Projects Over Time

Alexis Beaud, John Andrew Nyman, Louisiana State University, School of Renewable Natural Resources

abeaud3@lsu.edu

Wetlands in Louisiana are vital to maintain and support for many reasons, including to provide home to unique wildlife and fisheries that are essential to Louisiana culture. Since 1990, the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) has been funding coastal wetland restoration projects in Louisiana.

We are (i) characterizing CWPPRA projects regarding acres benefitted, cost per acre, restoration type, location, completed or not, etc., (ii) testing for differences over time in those characteristics, which may reflect evolution of knowledge and abilities regarding the effectiveness of different restoration types, and (iii) testing for differences in project characteristics among completed projects, deauthorized, and authorized projects awaiting full funding.

Preliminary analyses indicate that CWPPRA authorized 229 projects through 2022. Of those, 122 were completed, 50 were deauthorized, and 57 are being planned. The number of projects authorized averaged 9.3/year in the 1990s but declined to 4.2/year in the 20-teens. Likewise, the acreage benefited by authorized CWPPRA projects fell from an average of 7,323/year in the 1990s to 1,475/year in the 2010s. In the 1990s, authorized projects averaged $26,091/acre. Adjusting for inflation, the price should have been $60,501/acre but had risen to $94,382/acre in the 20-teens. That increase reflects a change from more efficient, but probably more uncertain projects, to less efficient but probably more certain projects. None of the 39 projects authorized after

2012 have been completed. Similarly, the number of projects completed averaged 8.8/year in the 1990s but declined to 0.6/year in the 20-teens.

Nutrient uptake and Growth of Wetland Plants in Mono and Paired Culture Mesocosms

Gary Ervin, Tatiana Lobato-de MagalhÃ£es, Mississippi State University, Biological Sciences, Mississippi State, Gray Turnage, Mississippi State University, Geosystems Research Institute

gary.ervin@msstate.edu

Wetlands serve as essential ecosystems for biodiversity conservation, environmental restoration, and nutrient mitigation, often relying on diverse plant species to maximize nutrient uptake and biomass production. This study analyzed the nutrient uptake and growth of four key wetland species Juncus effusus (Je), Schoenoplectus tabernaemontani (St), Typha latifolia (Tl), and Phragmites australis (Pa) grown in monocultures and mixed cultures. Mixed cultures comprised five species pairs: Je-St, Je-Tl, Je-Pa, St-Tl, and St-Pa. Principal component analysis (PCA) revealed slight variations in nutrient uptake between mono and mixed cultures. Tissue nutrient concentrations were generally higher in monocultures for all species and elements except J. effusus, which showed increased Ca, Cu, Fe, and Mn uptake in mixed cultures. In mixed culture, all species demonstrated greater nutrient uptake when paired with J. effusus than with other species. Macronutrients were more abundant in aboveground tissues, except S and P, while micronutrients were concentrated below ground, except Mn. We observed hyperaccumulation of micronutrients, particularly Cu and Fe in J. effusus roots in mixed culture and Mn in T. latifolia shoots in monoculture. Phragmites australis exhibited the highest total and aboveground biomass, while S. tabernaemontani and T. latifolia produced more belowground biomass. Juncus effusus consistently produced the least biomass and had a shoot-to-root ratio of approximately one. Interestingly, T. latifolia produced more aboveground biomass when paired with J. effusus than in monoculture, and P. australis had higher biomass when paired with J. effusus than with other species. These findings underscore the importance of species selection in wetland restoration and creation, as specific species interactions, particularly those involving J. effusus, can enhance nutrient uptake and biomass production. This research provides valuable insights for optimizing plant pairings to improve nutrient mitigation and that will be used to develop advanced ecological modeling for wetlands in collaboration with U.S. Army Corps of Engineers.

The Origins of Coastal Wetland Conservation Efforts in Louisiana

Roan Guidry, Department of Political Science, LSU, Baton Rouge LA 70803 University, Nyman, John Andrew, School of Renewable Natural Resources, LSU Baton Rouge, LA 70803

rguid46@lsu.edu

Wetlands are protected and managed worldwide to provide a range of ecosystem services including (i) habitat for plants and animals, (ii) carbon storage, (iii) improving downstream water quality, and (iv) reducing flooding by river and coastal waters. Our goal was to identify the earliest recorded examples of coastal wetland conservation efforts in Louisiana. We examined primary sources such as peer-reviewed journal articles, conference proceedings, governmental reports, and LSU Master's theses and dissertations. The earliest wetland protection efforts in Louisiana focused on the importance of coastal wetlands to sustaining continental populations of migratory birds. Earliest efforts protected wildlife from hunting in some places, and provided public hunting opportunities in others. Between 1911 and 1921, 170,000 acres had been donated to Louisiana by wealthy Americans to create refuges from hunting, and Louisiana purchased 60,000 acres to create the first public land for hunting in the United States. Scientific study of coastal wetlands was reported in governmental reports by the 19-teens, in graduate theses and dissertations by the 1950s, in conference reports by the 1960s, and in scientific journals by the 1970s. Topics included wild and prescribed fire to promote waterfowl food plants, and using sediment diversions to create wetlands that support waterfowl food plants. These efforts evolved into Louisiana's coastal conservation trust fund in the 1980s, CWPPA in 1990, and today's Master Plan.

Comparing Nitrate Reduction in Dredge Material Created and Natural Wetlands

Riley Jenkins, John White, Tracy Quirk, Louisiana State University, Department of Oceanography & Coastal Sciences

rjenk27@lsu.edu

Louisiana's coastal wetlands are rapidly disappearing due to lack of sediment input, subsidence, sea level rise, etc. These marshes provide many valuable ecosystem services, including improvement of water quality via nitrate removal. Microbial soil communities convert bioavailable NO3 to atmospheric N2 gas in a process called denitrification. Artificial marsh creation is one restoration strategy used to combat these losses. As a relatively new strategy, little is known about the long-term success of created marshes. This study took samples from Bayou Bonfouca, a brackish marsh on the north shore of the Lake Pontchartrain estuary in Lacombe, Louisiana. Cores were collected from both dredge material created and natural marshes. Intact 10 cm cores underwent a seven-day incubation after the water column was spiked to 2 mg N L^-1 to measure the nitrate removal rate per day. Samples were also analyzed for general soil characteristics, including bulk density, loss on ignition (organic matter content), total N, total C, total organic C, total P, inorganic P, and microbial biomass N. The denitrification rate was not found to be significantly different between the created (41.0±16.5 mg N m^-2 d^-1) and natural (51.8±20.0 mg N m^-2 d^-1) marshes. Additionally, there was no significant difference found in total carbon and microbial biomass N between the created and natural marshes. This indicates that the water quality function of newly created marsh is quick to develop, along with the return of microbial communities. Overall, dredge material created marshes appear to be as effective at nitrate removal as their natural counterparts, making it a viable restoration strategy for mitigating water quality concerns.

Geochemical Changes from Peat Rewetting with Saltwater at Duck Harbor, MA

Dakota Sievers, Louisiana State University, Environmental Sciences, Meagan Eagle, Woods Hole Coastal and Marine Science Center, US Geological Survey

dakota.l.sievers@gmail.com

Duck Harbor, the target area of this research, is part of the Herring River system in Wellfleet, Massachusetts. It was historically a salt marsh. In 1908, a dike was built across the Herring River channel, effectively cutting the system and Duck Harbor off from tidal flow. This tidal restriction led to salt marsh vegetation dying off and the area being colonized by freshwater species, mainly a pine forest. Restoration of this area was heavily discussed for years due to the dikes impact on environmental/water quality. In the winter of 2020, a dune separating Duck Harbor from the seawater in Cape Cod Bay was breached, and the area has since been subject to monthly flooding, but tidal flow hasn't been reestablished. Freshwater vegetation quickly died off, and there are even visible changes to the geochemistry of the land, such as iron staining. There is little information on the geochemical changes associated with rewetting peat with saltwater. This research aimed to find out how the porewater and sediment of Duck Harbor have been impacted since the dune breach. Samples collected from three sites across the target area were run through analyses such as ICP, magnetic susceptibility, and x-ray fluorescence in order to find out how trace metals and nutrients concentrations have fluctuated, specifically between sites. The information gained from this project has broader implications with the restoration and management of previously functional wetlands that have been damaged by diking and development in other parts of the state. Managers can use this data to try to predict how iron, other trace metals, and nutrients will behave as exposure to seawater continues throughout the site and into Herring River.

Characterizing Microplastics in Biosolids and their Transport Across Riparian Buffers into Wetlands

Marcela Strane, Devin Shaffer, University of Houston, Civil and Environmental Engineering

msstrane@cougarnet.uh.edu

Microplastics (MPs) are emerging contaminants that threaten human health, agricultural applications, and aquatic environments, and thus, there is an active global effort to mitigate MP pollution. Biosolids are wastewater-derived solids rich in nutrients that are often land-applied as fertilizers. Biosolids retain MPs from wastewater treatment facilities, and their land application may pose a potential risk for rereleasing MPs into the environment. With rainfall-runoff events, MPs can be transported from terrestrial sites to surface water bodies, such as wetlands. To better understand the transport of MPs from land application sites to aquatic environments, the physical and chemical properties of Class A Hou-Actinite biosolids and the MPs contained within were characterized. The size distribution of the biosolids was determined by image analysis using ImageJ and by gravimetric analysis using the ASTM sieving method (Standard D6913/D6913M-17). MPs were isolated from the biosolids by visual

inspection and density separation. Their physical properties were characterized by image analysis, and their chemistry was characterized using Raman spectroscopy. This information will inform planned field experiments to study MPs mobilization from biosolids and their potential capture from runoff in riparian buffers. Biosolids plots will be established upstream of Zone 1 riparian buffers with lengths of 3 feet, 6 feet, and 11 feet. The MPs transported from the biosolids plots and through the riparian buffers to wetlands mesocosms will be quantified. The removal of mobilized MPs in the riparian buffers will be characterized by a capture coefficient, and criteria will be established for the design of riparian buffers for MP removal.

Comparing arthropod and plant communities across natural and created brackish marshes in coastal Louisiana

Patricia Thibodeaux, LSU, Agriculture, Michael Polito, Angela Stahl, LSU, Oceanography & Coastal Sciences

pthib13@lsu.edu

Coastal land loss in Louisiana is occurring due to a combination of factors including man-made levees along the Mississippi River which prevents natural deposition of sediment into the surrounding marshes. In order to combat this issue, marsh creation and river diversion projects that build up newly created land and restore connections between the Mississippi river and coastal wetlands have been implemented. Once this new land is formed, it is vital to ensure that these created marshes share the same ecological characteristics as natural (i.e., reference) marshes. Here we compared plant communities and arthropod food webs between created and reference sites. This was done by comparing plant biomass, arthropod abundance, and arthropod stable isotope values collected from created and reference sites. Plant biomass did not differ between created and reference marshes, but it did differ among taxa. Spartina alterniflora had a higher biomass than any other plant species. Arthropod abundance did not differ among feeding types (herbivore, carnivore, omnivore, detritivore) or between created and reference marshes. The δ13C and δ15N values of arthropods were significantly higher at reference vs created sites. δ15N significantly differed among feeding types with omnivores and predators having higher values. δ13C did not significantly differ among feeding types. Overall, we observed similar plant and arthropod communities at created and reference sites. However, differences in arthropod isotope values may imply food web differences between these sites. Going forward, I will analyze plant stable isotope values to clarify created and reference site food web pathways.

Friday October 18

700-0900 Registration and continental breakfast

730-0830 SWS South Central Board meeting - Board members only

900-920 A brief history of wetland research at LSU from the Associate Dean

920-1000 **Plenary 2 - Examining the Bottom of Food Webs to Assess Ecosystem-wide Impacts of Restoration in Coastal Louisiana**

Dr. Melissa Baustian

mbaustian@usgs.gov

Dr. Melissa M. Baustian is an Ecologist at U.S. Geological Survey Wetland and Aquatic Research Center. Dr. Baustian studies how coastal ecosystems function under the influence of nutrient enrichment, climate change, and restoration. Her research assesses current and future functions of nutrient cycling, trophic dynamics, and carbon sequestration in pelagic, benthic, and vegetated habitats. Her talk "Examining the Bottom of Food Webs to Assess Ecosystem-wide Impacts of Restoration in Coastal Louisiana" will be of interest to a wide range of students and professionals as it weaves together coastal ecology, diverse floral and faunal interactions, and restoration science

1000-1030 Coffee break

1030-1230 Technical session 3

1030-1050 **Delta Land Services**

Lee Walters, Delta Land Services

lee@deltaland-services.com

Delta Land Services (Delta) is a wetland mitigation, land management, and ecological offset company providing complete and comprehensive offset services to both private and public industry throughout the gulf coast. With a staff of 21 professionals, Delta is comprised of a highly qualified workforce complete with skills necessary to provide effective and timely ecological offset solutions to a variety of clients. Founded through a private partnership in 2009, Delta has a diverse client base ranging from local governments to large energy companies.

To date, Delta has developed 50 mitigation sites, comprising over 47,500 acres and 12 miles of stream, in Louisiana, Texas, and Mississippi. Secured through acquisition and landowner partnerships, these areas have been restored to native hardwood forests, cypress swamps, marshes, and coastal prairie. Delta currently operates 29 approved mitigation banks and 6 approved amendments within the USACE New Orleans (CEMVN), Vicksburg (CEMVK), Fort Worth (CESWF), and CESWG Districts, totaling 19,885 mitigation acres and 46,124 linear feet of stream restoration. In addition to banking, Delta serves as the responsible party for the establishment and main¬tenance of 42 approved PRM projects consisting of 3,946 mitigation acres and 12,751 linear feet of

stream. Delta is developing another 7 pending mitigation banks and 2 pending bank addendums totaling 5,175 mitigation acres, which are under review within the CEMVN and CESWG. The CESWG is also reviewing 2 additional PRM plans comprising another 13 mitigation acres in Texas.

In 2022, Delta embarked upon a Climate Mitigation initiative by acquiring the Avahoula Climate Mitigation Site, a 7,200-acre site in Catahoula Parish, where marginal agricultural land will be restored to native bottomland hardwood through afforestation. An assessment of ecosystem service values on Avahoula documented $2.67 billion in new and permanently protected ecosystem services (discounted at a 3% rate) with $79.92 million in ecosystem services created annually.

1030-1050 **Novel Approaches May Improve Wet Prairie Restoration Outcomes**

Ashlynn Smith, University of Florida, School of Natural Resources and Environment, Debbie Miller, Mack Thetford, University of Florida, West Florida Research and Education Center, Matthew Deitch, Northern Illinois Center for Community Sustainability, Emily Coffey, Atlanta Botanical Garden, Southeastern Center for Conservation, Daniel Irick, U.S. Army Corps of Engineers

ashlynnsmith@ufl.edu

Woody encroachment into herbaceous ecosystems represents a major threat to global biodiversity. Terrestrial wet prairies adjacent to the Gulf of Mexico coastline in the Florida panhandle are among the many ecosystems in the United States experiencing woody encroachment. These plant communities have been described for decades as an ecosystem worth our attention due to high plant species diversity and endemism. Direct loss of these species-rich ecosystems is often a result of coastal development. Degradation to remaining isolated wet prairies on protected public lands is primarily caused by fire suppression, ultimately leading to hardwood encroachment. Research related to reliable and efficient restoration strategies to return these systems to their natural herbaceous state, as well as understanding the ecological benefits of doing so, are essential for their continued existence.

In 2019, a partnership was formed between the University of Florida and the Atlanta Botanical Garden with funding from a Conservation Enhancement Grant funded by Gulf Coast Ecosystem Restoration Council (RESTORE Council) and managed by U.S. EPA to assess novel restoration approaches such as mechanical removal of accumulated organic matter and diaspore transfer alongside conventional restoration methods. All methods were assessed through the evaluation of shifts in groundcover vegetation, groundwater dynamics, and soil physical and chemical properties. Pre-restoration groundwater data collection revealed higher groundwater chloride, sodium, potassium, sulfate, and magnesium ion concentrations in woody encroached wet prairies compared to reference wet prairies. This interdisciplinary approach has led to insights regarding considerations for restoration action and potential consequences of inaction. Findings related to post-restoration groundcover vegetation and soil conditions based on restoration treatments will be presented.

1110-1130 **Wetland resources of Spanish Lake, Louisiana**

Gregg Fell, Alex Ameen, Natural Resource Professionals, LLC

gfell@nrpllc.com

The Spanish Lake Basin (Iberville and Ascension Parishes, LA) is situated in a uniquely transitional area of the Lower Mississippi River, where the downstream extent of the alluvial valley wall directly interacts with the deltaic plain. As a result, the basin was historically influenced by both riverine and coastal processes. Those influences were impeded as a result of human activity; however, private-sector efforts have been underway since the 1990's to restore the basin's extensive forested wetland habitat. Despite the basin's unique geologic history, regional significance, and conservation value, it has not been extensively studied by the research community or government agencies. We can also discuss the recent history of the Spanish Lake Basin, and review evidence of recently increasing coastal influence on the system.

1130-1150 **Seasonal shifts in hydric soil morphology: implications for wetland delineations**

Sydney Bufkin, Jacob F. Berkowitz, US Army Engineer Research and Development Center

Sydney.d.bufkin@usace.army.mil

The identification and delineation of wetlands requires documentation of hydric soils, wetland hydrology, and hydrophytic vegetation. However, identifying hydric soils with high chroma colors remains challenging as they lack diagnostic morphological features associated with established Field Indicators of Hydric Soils. In response, this study investigated problematic soil situations in the Slate Belt region of North Carolina using the Hydric Soil Technical Standard (HSTS). Ten study locations were monitored for water table level, anaerobic conditions, and soil morphology over time. Results show dynamic shifts in soil morphological characteristics, with seven locations meeting HSTS requirements and all locations meeting at least one Field Indicator of Hydric Soils during the normal wet portion of the growing season. However, by July, no study locations met the HSTS criteria, and only three locations continued to exhibit a Field Indicator of Hydric Soils. The study highlights the importance of considering seasonal variations and dynamic soil processes in hydric soils identification and wetland delineation, highlighting the need to conduct evaluations during the normal wet portion of the growing season to obtain accurate assessments of wetland resources. These findings have implications for wetland management and call for further research to understand seasonal shifts in high chroma soil morphology, especially in rapidly urbanizing regions.

1150-1210 **Elucidating the role of Sabal minor as modulators in carbon sequestration in Bottomland Hardwood Forests**

Julia Jones, Nicholls State University, Biology

jjones110@nicholls.edu

Coastal land loss is a critical issue facing Louisiana, with large-scale restoration efforts currently being undertaken to save these valuable habitats. Importantly, such restoration efforts also provide an opportunity to optimize carbon sequestration capacity as ecosystem restoration projects are implemented in degraded areas. Among the many types of habitats included in Louisiana's coastal restoration efforts are bottomland hardwood forests, which are recognized as important carbon sinks. However, little research has been undertaken to assess the potential role of understory vegetation, such as Sabal minor, in augmenting carbon sequestration processes. A preliminary field investigation confirmed that although the carbon stock in Sabal minor understory is a minor fraction compared to woody vegetation in a Louisiana bottomland forest, it nonetheless contributed significantly to the overall bottomland forest aboveground carbon pool. Further research is currently underway in the Jean Lafitte National Park Barataria Preserve to investigate whether S. minor, a species that exhibits both extensive ground coverage in these habitats and high photosynthetic efficiency, could enhance soil carbon sequestration processes. This study will provide insights as to whether integration of Sabal minor into bottomland hardwood restoration projects could be used to enhance the soil carbon sequestration capacity of these efforts.

1210-1230 **Wetland functions altered by prolonged flooding**

Jacob F. Berkowitz, Will Tomlinson, Jay Price, US Army Engineer Research and Development Center

Jacob.F.Berkowitz@usace.army.mil

A 2019 flood inundated 500,000 acres in the Yazoo basin, a major Mississippi River tributary, inducing extensive forested wetland tree mortality. In response, pre- and post-flood data from 102 study sites were compared to evaluate changes in wetland functions. Results indicate that the recruitment of standing dead trees (snags) increased the delivery of wetland functions, but that >30% of sites now exhibit excessive snag densities. The trajectory of wetland functional outcomes will be discussed along with potential implications for wetland restoration and mitigation areas.

1230-145 Catered lunch

145-300 **Interactive career panel and professional networking**

Panelists:

Ms. Kara Vick is the Team Lead for the Army Corps of Engineers, Compliance Branch in Galveston District since 2022 and started working for the Corps in 2008. Prior to working for the Corps, she spent 7 years in state government, involving an internship for Texas Parks and Wildlife, a Coastal Biologist for Texas General Land Office (Asset Inspections), and an Environmental Investigator for Texas Commission on Environmental Quality (Waste Section). Kara graduated from Texas A&M University at College Station with a BS in Wildlife Management and Fisheries, emphasis in Ecology. She graduated from Texas A&M University at Corpus Christi with a MS in Environmental Science.

Contact: kara.d.vick@usace.army.mil

Mr. Eric Fuselier, PWS is an environmental consultant at Olsson in Fayetteville, AR and has been a member of SWS since 2016. He has served on the executive board for the South Central Chapter since 2019 and is currently serving as the President-Elect.

Contact: ericfuse81@gmail.com

Dani Dilullo has served as the Director of Education and Engagement at Louisiana Sea Grant since 2021. In this role she works to connect university researchers with coastal stakeholders to foster meaningful collaborations. Dani works with K-12 teachers, students, state and federal agencies, and community groups to enhance environmental literacy and workforce development along Louisiana's coast. Dani brings over 20 years of experience in both formal and non-formal education and has worked in California, Florida, North Carolina, Pennsylvania, South Carolina, and Washington. This diverse work experience has allowed her to observe numerous approaches to environmental outreach and she seeks to integrate best practices for what works best for Louisiana stakeholders. In addition to her duties at Sea Grant, Dani serves on the Louisiana Environmental Education Commission, the Gulf of Mexico Alliance Education and Engagement Team, and the CWPPRA Public Outreach Committee. Dani received her Bachelor's of Science in Biology and Economics from Davidson College and a Master's of Science in Biodiversity and Conservation from the Scripps Institution of Oceanography.

Contact: ddiiullo@lsu.edu

Ms. Sydney Bufkin is a Research Biologist in the Wetlands and Coastal Ecology Branch at the US Army Engineer Research and Development Center (ERDC). She began her career at ERDC in the Environmental Lab in 2018 as a student trainee and transitioned to a full-time position in 2019 after completing her bachelor's degree in Natural Resources from Mississippi State University's College of Forestry. She furthered her education by earning a master's degree in Soil Science from North Carolina State University in 2023. Sydney has a diverse background in wetland assessments, forestry, natural resource management, biogeochemistry, and wildlife studies. This expertise enables her to study wetland processes comprehensively and apply her findings to address environmental concerns. Her research primarily focuses on hydric soils and wetland restoration, including using restored wetlands to mitigate phosphorus pollution in the Great Lakes and investigating problematic hydric soils. She has conducted wetland research across numerous states in the Central and Eastern United States.

Contact: sydney.d.bufkin@usace.army.mil

Mr. Lee Potter is a Ph.D. candidate in the LSU Department of Oceanography and Coastal Sciences who started his degree in January 2023. Lee holds a M.S. in Renewable and Natural Resources from Louisiana State University and conducted research on environmental controls on carbon biogeochemistry in aquatic systems. His current research project is evaluating watershed phosphorus biogeochemistry in the Lake Pontchartrain Basin with funding by the U.S. Geological Survey.

Contact: lpotte6@lsu.edu

300-430 Tour of MS River model and LSU Center for River Studies

The LSU Center for River Studies conducts research on the world's major rivers with a specific focus on the Mississippi River. We train the next generation of engineers, geologists and river experts. LSU Center for River Studies is located on the Baton Rouge Water Campus near the banks of the Mississippi River. It houses one of the world's largest movable bed physical models - the Lower Mississippi River Physical Model.

The river model is 10,000 square feet and based on the topography and bathymetry of the Mississippi River Delta covering southeast Louisiana. Pumps are used to control the water and sediment injection. More than 18 acoustic sensors coincide with U.S. Army Corps of Engineers river gages on the Mississippi River and measure water levels in the model river. Twenty high-definition projectors illuminate the model and bring the river and coast to life.

The LSU Center for River Studies is made possible through a partnership with the Louisiana Coastal Protection and Restoration Authority, or CPRA. The center's interactive exhibit space offers opportunities for guests of all ages to learn more about the history of the Mississippi River, Louisiana's disappearing wetlands, and ongoing coastal restoration projects across the coast.

430-630 Student awards, catered Cajun dinner, reception, and silent auction

<u>Saturday October 19</u>

0900-1130 Swamp tour, Optional Event

1130-100 Catered lunch

100 Adjourn

Comment card:

We want your feedback! Please fill out the following and leave it with a Board Member so that we can improve future meetings. Providing your contact information is totally optional.

1) What was your overall impression of the meeting (circle one):

Stinks/Dogwater Just OK Mid Very good Amazing/Bussin!

2) Would you consider attending another meeting (circle one):

Heck No Maybe Yes Can't Wait!

3) What areas can be improved (circle all that apply)?

Venue Presentations Cost Food Other

Specific items: _____

4) How would you describe the **quality of the content** presented (circle one):

Stinks/Dogwater Just OK Mid Very good Amazing/Bussin!

5) How would you describe the **professional value** delivered by the meeting (circle one):

Stinks/Dogwater Just OK Mid Very good Amazing/Bussin!

6) Favorite aspect of the meeting: _____

7) Least favorite aspect of the meeting: _____

8) Other feedback:

OPTIONAL contact information if you would like to discuss your responses with a Board Member: