



NATURAL RESOURCES & ENVIRONMENTAL SCIENCES

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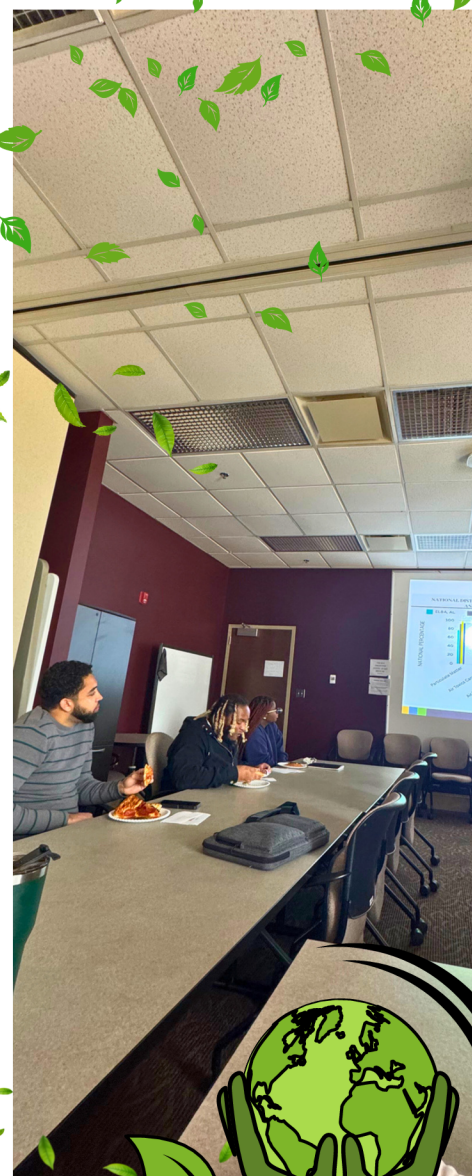


IN THE NEWS

HBCU SCHOLARS PANEL

By Alexis-Marie Parrish

On February 18th, the Alabama A&M Environmental Science Club hosted a panelist/roundtable discussion with the Sustainable Community HBCU Scholars discussing environmental injustices in areas of Alabama. This discussion shed light on the disproportionate environmental burdens faced by marginalized communities in Alabama, focusing on topics such as pollution, hazardous waste sites, and policy solutions. Our panelists shared their expertise, followed by a Q&A session to encourage audience engagement.



Photos by Alexis-Marie Parrish, Dr. Elica Moss, and Keyshawn Johnson

BLACK HISTORY MONTH...A MOMENT TO HONOR EXCELLENCE.

By Promise Johnson

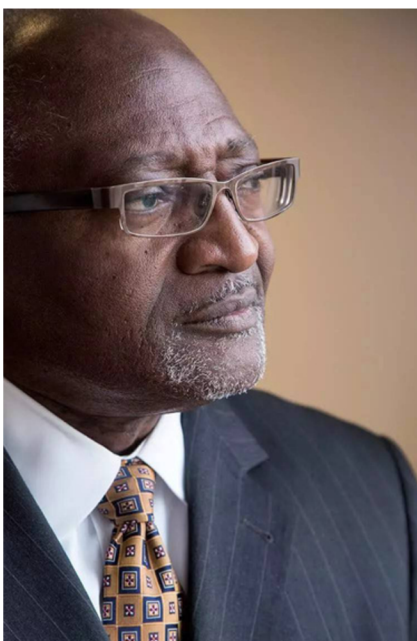
As we enter the month of February at Alabama A&M, we have the opportunity to once again celebrate and honor impressive African American individuals who have shaped our culture through their passion, creativity, and prowess.

This month, we will focus on four influential African Americans who have made significant contributions to the protection, advocacy, and reform of the environment. Whether you're already familiar with their work or hearing about them for the first time, stick around for a moment to read their stories...you will not be disappointed, but rather inspired!



DR. WANGARI MAATHAI

In 1977 Dr. Wangari Maathai founded what some may know today as the “Green Belt Movement” in Kenya. GBM is an environmental organization that empowers communities, particularly women, to conserve the environment and improve livelihoods. Under the National Council of women of Kenya, this vision was founded to strive for better environmental management, community empowerment and livelihood. According to Dr. Maathai “Planting Trees” was the entry method.



DR. ROBERT BULLARD

Dr. Robert D. Bullard, often referred to as the father of environmental justice, is a distinguished scholar and activist in the fields of urban planning, environmental policy, and climate justice. He served as the former Dean of the Barbara Jordan-Mickey Leland School of Public Affairs at Texas Southern University and is the founding Director of the Environmental Justice Resource Center at Clark Atlanta University. Dr. Bullard has authored 18 books on topics such as environmental racism, sustainable development, and community resilience. A U.S. Marine Corps veteran. His groundbreaking work has earned him recognition as one of the leading voices in environmental justice and climate change advocacy.



Hazel M. Johnson

“Mother of Environmental Justice”

Hazel Johnson was born on January 25, 1935, in New Orleans, Louisiana, in an area now known as "Cancer Valley." For over 40 years, she worked to address environmental health issues in her neighborhood. Despite starting from humble beginnings, she played a key role in launching a national movement. In 1984, Johnson was invited to witness the signing of Executive Order #12898, which focused on environmental justice for minority and low-income populations. She collaborated with community leaders from across the country to create the "17 Principles of Environmental Justice," a guide that is still used by activists today.



Mustafa Santiago Ali

Dr. Mustafa Santiago Ali is the current Executive Vice President of the National Wildlife Federation. Former interim Chief of Programs at the Union of concerned scientist, Instructor at American University and Founder and CEO of Revitalization Strategies. A well established leader who is taking the issue of climate solutions & environmental justice by storm. Dr. Mustafa started his journey in climate health advocacy at the ripe age of 16 years old and has not stopped! Ali brought attention to social and environmental justice issues in the U.S. and abroad. Mustafa uses a holistic approach to revitalizing vulnerable communities, and has worked with more than 500 domestic and international communities to secure environmental, health, and economic justice.



Black History Month...A moment to honor excellence.



EVENTS

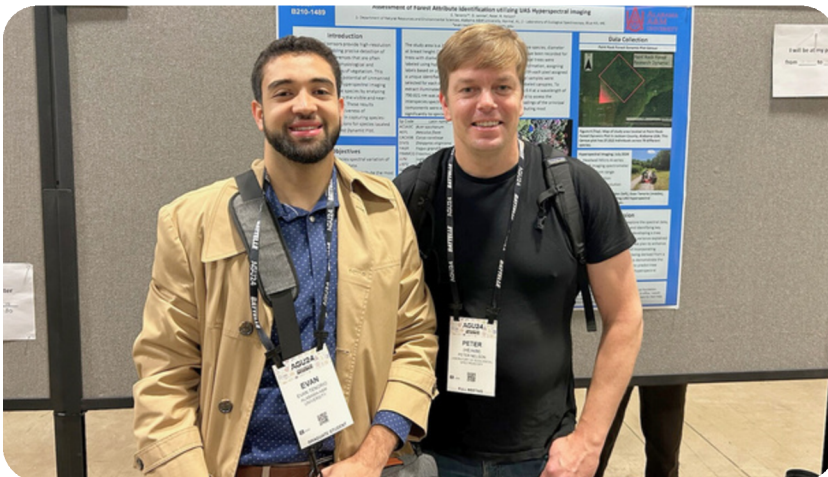
AGU CONFERENCE

By Evan Tenorio

As a graduate student at Alabama A&M University, I was thrilled to attend the American Geophysical Union (AGU) conference this past December. As the largest gathering of its kind, the AGU annual meeting brings together Earth and space scientists worldwide to share cutting-edge research. One of the biggest topics of AGU is climate change and climate action.

During the event, I had the opportunity to attend presentations, explore poster sessions, and visit the exhibit hall, which featured a plethora of organizations, from tech companies to federal agencies. I also presented my research, receiving valuable feedback and connecting with current and past mentors and advisors.

The atmosphere was inspiring and collaborative, leaving me optimistic about the future of Environmental/Earth science and confident that the next generation of scientists will continue to drive positive change. The conference was held in Washington D.C. from December 9th through the 13th.



Evan Tenorio and Peter Nelson at the AGU Conference. Peter Nelson serves as the Forest Ecology Director at the Schoodic Institute at Acadia National Park. He serves on Tenorio's graduate committee and has helped him gather drone data for his graduate project.

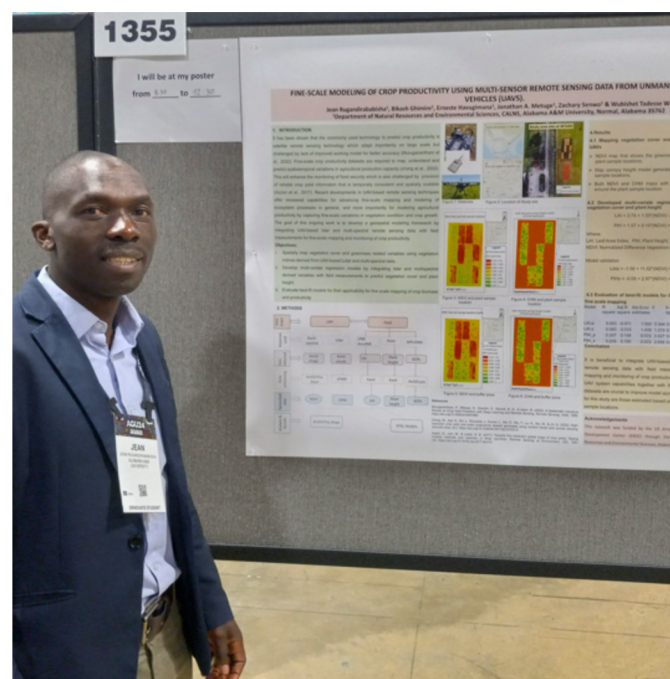
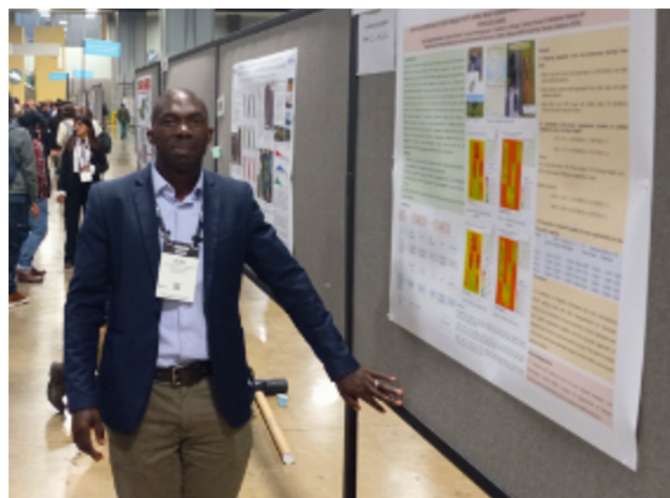


Photos from Evan Tenorio

AGU CONFERENCE

By Jean Rugandirababisha

Jean Rugandirababisha, a Ph.D. student in the Department of Natural Resources and Environmental Sciences (NRES) attended the 2024 AGU Conference and presented a poster on his research project, Fine-Scale Modeling of Crop Productivity Using Multi-Sensor Remote Sensing Data from Unmanned Aerial Vehicles (UAVs). Rugandirababisha enjoyed interacting with other researchers in a learning-oriented environment and is excited to attend the 2025 AGU Conference.



Photos from Jean Rugandirababisha

CLUB ACTIVITIES

THE WILDLIFE SOCIETY GOES HUNTING

By Dr. William Stone



Photos by Dr. William Stone

Members of the Academics Afield Hunting Club, a subset of The Wildlife Society, went hunting for ducks and deer during January and February. On the weekend of January 25-26, five students in the AAHC traveled to the State Cattle Ranch in Greensboro to hunt for ducks. Students shot four ducks—three ring-necked ducks and a green-winged teal duck. Their hunting mentors also gave the students some more ducks.

On the weekend of February 1-2, five students traveled to Bullock County to hunt white-tailed deer. Both Chris Burns and Elijah McCray shot a deer. Once again, the hunting mentors donated some venison to the hunters so all participants could try the meat. In the Fall, the AAHC conducted an archery deer hunt and a dove hunt with shotguns after shooting practice with shotguns and rifles.

The Southeastern Section of The Wildlife Society will host their Wildlife and Forestry Field Techniques Course this summer. The course will be taught from June 6th through the 20th and will be hosted by the Jones Center at Ichauway in Newton, Georgia. The Jones Center is a 29,000-acre working forest managed for longleaf pine, northern bobwhite, and numerous plant and animal species native to the Southeast. The purpose of this course is to offer field experience that covers numerous topics, including hands-on learning in capturing, handling, and tracking wildlife (e.g., birds small mammals, bats, meso-mammals, amphibians, and reptiles), species identification, assessing wildlife-habitat relationships, and silviculture. Additionally, TWS plans to offer exposure to firearms, equipment operation, plant ID, and prescribed fire. All of these are important skills for any wildlife biologist, manager, or natural resource specialist.

BONFIRE

By Julia Mapp Williams

The environmental science club partnered with the freshman peer mentors and hosted a bonfire on the evening of January 29th. We welcomed people of all ages to come and enjoy s'mores, line dancing, and a wide selection of local food vendors. Guests were also able to participate in Write Burn Release, which enabled them to let go of past stressors and welcome the new semester off freely.



Photos by Julia Mapp Williams

RESEARCH

30 YEARS OF RESEARCH AT AAMU

By Rachel Stone and Dr. Zachary Senwo



Photos by Rachel Stone

January 14th, 2025, heralded the new NRES Seminar Series, which started as a CALNS' Seminar Series in 2019-2020 but had to be paused due to COVID-19. Dr. Zachary Senwo presented the first seminar on *Strengthening Soil Research and Teaching Programs at AAMU: 1996 to Present*. Dr. Senwo has been at Alabama A&M University for almost 30 years. Dr. Senwo discussed some of the many changes to AAMU during the past 30 years.

Dr. Senwo's first graduate student was Dexter Watts, who received his Masters from AAMU in 2006. Watts' thesis topic was *Microbial Respiration of Poultry Wastes-amended Soils*. Watts later went on to receive his Ph.D. from Auburn University. Dr. Senwo's many graduate students have gone on to achieve success in various fields, including soil science and microbiology.

Dr. Senwo then transitioned into speaking on some of the research he has done on soils during his time at AAMU. He discussed how enzymes and soil microbes are involved in nitrogen, carbon, sulfur, and phosphorous cycles in soils and how plants prefer ammonium over nitrate due to easier absorption. Understanding how soils work and how important soils are to life on Earth can help with several problems humans are facing today, including climate change and global food insecurity. Dr. Senwo highlighted the importance of student training in science, especially soil science, to research possible fixes to climate change, soil health, and food insecurity.

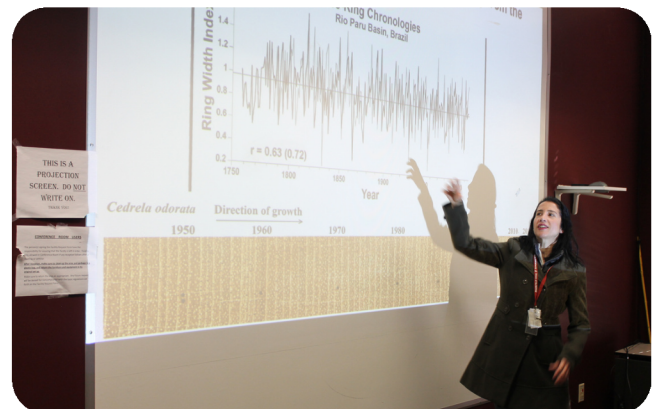
DENDROCLIMATOLOGY

By Rachel Stone and Dr. Daniela Granato de Souza

Dr. Daniela Granato de Souza, an assistant professor in forestry ecology, spoke to a full room at the second NRES Seminar on January 28, 2025. She discussed her research on dendroclimatology, focusing on tree rings to study past climate conditions in the Amazon basin. She highlighted the importance of old-growth forests for biodiversity and carbon storage, noting that eight of the world's oldest tree species are in the United States, primarily in California.

Dr. Granato de Souza has built tree-ring chronologies in the Amazon to reconstruct historical climate variability, revealing extreme floods and droughts. Her work also includes studying the impact of deforestation and climate change on the Amazon's ecosystems and hydrological cycle.

Dr. Granato de Souza hopes to travel back to the Amazon with students to continue her research on dendroclimatology. She also intends to study tree rings in the Bankhead National Forest and the Paint Rock Forest Plot to study tree growth and past climate variability.



Photos by Rachel Stone and from Dr. Daniela Granato de Souza

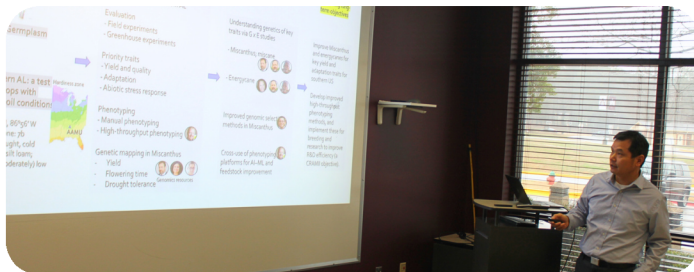
BIOENERGY CROP RESEARCH

By Rachel Stone and Dr. Xianyan Kuang

Dr. Xianyan Kuang held his NRES Seminar on February 11th on Advancing Genetics, Genomic, and Breeding for Bioenergy & Industrial Crops. The seminar showcased the work of Dr. Kuang and his research team on bioenergy crops, particularly *Miscanthus*, energycane, and industrial hemp, at the Winfred Thomas Agricultural Research Station (WTARS). Located in northern Alabama, the station has a unique climate and soil with low organic matter, which is ideal for growing bioenergy crops that thrive on non-productive land while enhancing soil health.

Miscanthus, a key focus of the team, is a perennial grass known for its high biomass yield and low input needs, making it an ideal candidate for bioenergy production. The team is working on exploring its genetics, genomics, and breeding, focusing on traits such as yield, flowering time, and abiotic stress tolerance. Efforts are also underway to improve cold tolerance in energycane to extend its geographic range for production. Sorghum, due to its rich genetic/genomic resources that facilitate studying more complex crops, was introduced as a model organism for the team to study *Miscanthus* and energycane. Moreover, the team is investigating the potential of industrial hemp, a versatile crop with multiple end uses; they are evaluating its genetic resources through extensive field trials. The data collected is shared with cooperative agencies, contributing to a national database of phenotypic data. Throughout these trials, the team employs both manual and UAV-based phenotyping methods to gather data on various traits, which is then integrated with genomic data to enhance breeding and genetic understanding.

Dr. Kuang extends an invitation to faculty and students to visit the research station, offering opportunities for collaboration with faculty members and providing hands-on research experience for students.



Photos by Rachel Stone and from Dr. Xinhua Xiao

DISSERTATION PROPOSAL- BIOPOLYMERS AND CRAYFISH

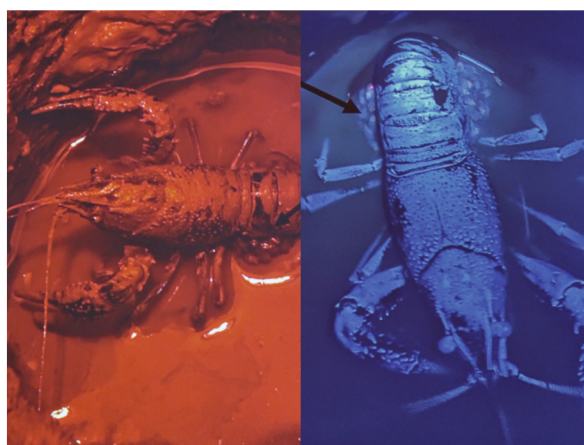
By Rachel Stone and Karman Morgan

Karman Morgan, a Plant & Soil Science doctoral student at Alabama A&M University, presented her dissertation proposal on February 7th examining how biopolymer-amended soils affect the survival, reproduction, and burrowing behavior of the invasive red swamp crayfish (*Procambarus clarkii*). Her research addresses the critical intersection between freshwater ecosystem biodiversity loss and soil stabilization methods, targeting both invasive species impacts and stream bank erosion.

Morgan's study evaluates the ecological safety and effectiveness of exopolysaccharides (EPS) from *Rhizobium tropici* as a soil stabilization treatment through three critical experiments. and mitigate crayfish-induced erosion. The acute toxicity study will determine the median lethal concentration (LC50) using 120 juvenile crayfish across five EPS concentrations plus control groups. The reproductive assessment will examine potential sublethal effects on maternal behavior, egg development, and hatching success in artificial burrowing chambers. The burrowing behavior analysis will document how biopolymer-amended soils influence burrow construction patterns, depth, and maintenance activities.

This research offers potential dual benefits for environmental conservation. First, it will determine if EPS-treated soils can effectively stabilize stream banks without harming aquatic life. Second, understanding how these treatments affect crayfish behavior and reproduction could reveal new approaches for managing invasive populations, particularly in areas where *P. clarkii* causes substantial ecological damage.

The study will establish standardized protocols for assessing soil amendment impacts on burrowing organisms while advancing both the practical and theoretical foundations of sustainable watershed management. These outcomes will be particularly valuable for land managers, conservation biologists, and agricultural professionals working to balance soil stability with ecosystem health in riparian zones.



Photos by Rachel Stone and Karman Morgan

WANT TO KNOW MORE?

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FOR YOUR STORY TO BE
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