MGA Faculty Produce Array of Professional Work

BIOLOGY

HUDDLESTON, READY, MAHAFFEE

At least as far back as the ancient Egyptians, humans have been keeping honeybees and harvesting honey, and for the last five years so has MGA. **Dr. Clinton Ready**, **Dr. Gloria Huddleston**, and **Margaret Mahaffee** have been raising honeybees, educating students, staff and the public about honeybee conservation and pollinator decline and, more recently, sponsoring undergraduate honeybee research projects. The professors and students make up the "bee team" and do much of their work at the campus hives, which are located in a wooded area near a pond on the Cochran Campus.

"We started the honeybee program to increase student opportunities," Huddleston says, "but we also wanted to help efforts to educate the public about pollinator decline."

Last year, student research focused on the medicinal uses of honey and propolis (a substance honeybees produce from plant resins such as pine resin or pine tar). Nine students and their faculty mentors studied the effects of honey or propolis on the growth of four different types of bacteria. They found that honey will prevent the growth of some bacterial strains within 24 hours. The students presented their findings to the Cochran community at a special honeybee night sponsored by the local Friends of the Library club.

This year, students are learning to make fondant (similar to cake icing) to offer to the honeybees for spring feeding. They have divided the fondant into four batches, three of which were scented with different plant essential oils. Students are monitoring the feeding stations to

learn which essential oils the bees prefer and to learn more about feeding behavior in general. Many beekeepers believe that honeybees are attracted to certain essential oils and that others might be important in keeping colonies and hives healthy. Students will present their findings at the 2017 undergraduate research symposium, as they did last year. One of last year's students, Hannah L. Smith, went on to a summer internship at Georgia Tech to help maintain their campus colonies and to continue researching the antibacterial characteristics of honey.

As a side project, students learn to make lip balms, hand creams, etc., from hive products such as bee's wax and honey. They have also been making candles from the wax.

"Our work is helping to educate students and the community about the importance of protecting our pollinators," Ready says. "Our program is self-supporting and a great resource for undergraduate research projects."

Middle Georgia State University faculty members are engaged in a wide scope of research, scholarship and creative work, some of which gives their students opportunities to apply the knowledge they gain in the classroom.

BIOLOGY

Tardigrades, also known as water bears or moss piglets, are microscopic invertebrates. They have eight legs, no respiratory or circulatory system and have been found on every continent. Tardigrades are able to survive conditions that would kill most other animals, such as extreme heat and cold, lethal doses of radiation – even the vacuum of space. How? According to **Kirby Swenson**, assistant professor of Biology, tardigrades slow their metabolism during extreme environmental conditions and shrivel to a third of their original size and enter what's called a "tun" state. They are able to expel nearly all of their body fluids and replace them with a sugar called trehalose. During dehydration, they accumulate trehalose in order to protect their bodies from cellular damage. Trehalose's properties act as anti-freeze for tardigrades.

These are not just fun facts to know and tell. "Researchers are currently looking into the preservation properties of trehalose and how those properties may be applied to humans," Swenson says. "Scientists have speculated it may minimize cell death in the brains of patients with Huntington's or Parkinson's disease. One study showed trehalose exhibited antidepressant properties in mice. Other studies speculate that trehalose may


SWENSON

be used to lengthen the shelf life of vaccines and increase the viability of organs during organ transplants, and could be used to preserve many dehydrated products."

Swenson says there has been little research on tardigrades in Georgia. A 2007 survey found that only three species had been located and recorded in the state. No surveys had been done in Bleckley, Dodge, Houston, Laurens, or Bibb counties. So Swenson and two of his students, Colleen Clark and Laura Cocoma-Hernandez, are searching for and collecting tardigrade specimens on MGA's five campuses and placing them in their respective families. As of this spring they had identified six specimens on the Cochran Campus and were preparing to begin their survey on the Macon Campus. After additional research, Clark and Cocoma planned to present their findings at MGA's spring undergraduate conference.

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AGNEW

ART

What does a forest "feel" like? **Charlie Agnew**, associate professor of Art and director of MGA's Peacock Gallery, began to wonder after seeing a pine branch that had fallen in a storm. "Contemplating on the needles blowing in the wind made it apparent that the only way to capture the true 'forest experience' was to use parts of it to create art," he says.

The result is several pieces of art Agnew created using bark, leaves and pine needles as one part of the process to build layered surface textures on canvas. "I attempt to imply the notion of the forest floor, where debris from past seasons has collected."

Agnew's work in this series has been displayed at Mercer University and the Ampersand Guild Hall in Macon, in addition to MGA's own Peacock Gallery. You can see additional photos at www.facebook.com/fspgallery/posts/10154484789053448.

BIOLOGY

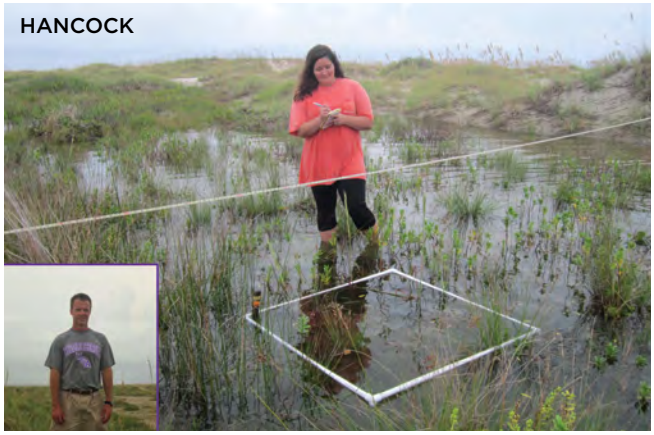
Assisted by students in his Biology Directed Studies classes, **Dr. Thomas Hancock**, assistant professor of Biology, recently began a study focused on the life history strategy of Hydrocotyle bonariensis (dune pennywort) at Fort Fisher State Recreation Area. Fort Fisher is a barrier island system located along the southeastern coast of North Carolina. Barrier islands are considered a physically controlled, harsh environment with blowing sand, high substrate temperatures, low nutrient availability, high sunlight, salt spray and salt water overwash via storm waves. Only a small, select suite of plants can tolerate this harsh environment.

To address a set of specific research questions, Hancock and his students established a series of five transects along a 12 kilometer stretch of Fort Fisher perpendicular to the shoreline. Along these transects, multiple random one-meter square samples were taken four times over the course of a year in each of four habitat areas. Hancock and his students collected Hydrocotyle bonariensis plants (roots, shoots, leaves and reproductive structures) for lab analysis.

Among many other things, they looked at whether Hydrocotyle bonariensis is an important component of the barrier beach environment at that specific location and to what extent they use asexual versus sexual reproduction in establishing and maintaining themselves there.

"A better understanding of native dune plant survival and adaptation to current conditions provides insights into how barrier island ecosystems might respond to future stresses such as development and climate change," Hancock says.

Hancock presented results at the 2016 Botanical Society of America conference. His students presented results at the 2017 North Carolina Academy of Science annual meeting and are submitting findings to the Journal of the NC Academy of Science.


HANCOCK


SARGENT

BUSINESS

Psychologists call it "confirmation bias" when people are more likely to notice comments that confirm their beliefs and less likely to notice contradictory information. **Dr. Carol Springer Sargent**, associate professor of Accounting, develops learning materials that help both students and auditors to improve their ability to notice disconfirming data better, leading to more balanced judgments of overall audit evidence. "Learning to see both sides of an argument clearly helps to develop better thinking and judgments help improve decision-making, not just in the auditing field," says Sargent. Sargent's micro cases teaching participants to tease out the confirming and disconfirming evidence translates into innovative teaching methods to help her MGA Accounting majors learn how to audit and improve the quality of their thinking.

Starting in 2017 the CPA exam includes business simulations, leading many students to try to complete the exam before those requirements begin. Sargent's students need not rush as they have been completing business simulations in their senior level classes as a course routine. Much of her research developing business simulations and tracking how they improve downstream course performance has been published in Issues in Accounting Education and resulting in a national award for outstanding research in accounting education.

Sargent has coached four MGA teams in the statewide internal audit case competition, which have reached first, second and third places in different years. As a result of consistently placing, MGA was invited to serve on the Academic Relations Board of the Atlanta Chapter of the Institute of Internal Auditors and to apply for certification from the Internal Auditing Education Partnership program.

ART

Artists and creators have always had to adapt to new technologies. But now, modern digital technologies threaten to turn original works into commodities by endlessly echoing and extending them through the hypersphere of the Internet. "We need to ask ourselves as artists what defines the nature of our work now that the digital image has become the standard, as we have moved away from hand-processed images and embraced software," says **Lee Simmons**, assistant professor of Art.

With those challenges in mind, Simmons and other faculty members at MGA – **Shannon Riddle** and **Dr. Keith Hamon** – worked with Craig Coleman of Mercer University to install an interactive performance piece and present it at the


SIMMONS, RIDDLE, HAMON

2017 Southern Humanities Conference. Using modern digital technology and a light show, the presentation explored the nature of the digital work as a hyperobject – a four-dimensional (4-D) object existing nowhere and accessible anywhere and everywhere – instead of as a physical object existing only in one place and time.

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YADAV

BIOLOGY

You've probably heard of the sugar substitute called stevia. **Dr. Pushpa Yadav**, assistant professor of Biology, and some of her students have been conducting tissue culture research on this natural, zero-calorie sugar plant. Stevia is native to Paraguay and Brazil and is commonly known as "honey yerba" or "honey leaves." Worldwide demand for the plant is increasing as the healthcare industry looks for ways to help people control obesity and to treat Type 2 diabetes. However, "seeds of stevia have less vigor and are mostly unviable and thus the germination rate in this plant species is only around 10 percent," Yadav says. "Therefore, stevia seeds cannot be used for mass propagation."

Yadav's research goal was to establish the plant in the laboratory through micropopagation (rapidly multiplying stock plant material to produce a large number of progeny plants, using modern plant tissue culture methods) and subsequently enhance its sugar content production.

The project gives MGA's undergraduate Biology students the opportunity to learn how tissue culture is performed; what the importance of hormonal balance and the nutrient components in tissue culture is; how to regenerate the whole plant from explants; and how to work aseptically in the lab.

Some of Yadav's students have already presented findings at MGA's undergraduate research conference. Her current students are designing and setting up an experiment for polyploidy induction.

ENGLISH

Her first full-length manuscript of poems, *The Disappearing Act*, won the 2016 Adrienne Bond Award for Poetry. "The poems in this collection explore the role of memory in shaping one's identity," says **Dr. Sara Pirkle Hughes**, lecturer of English. "In particular, the title of the book refers to a recurring idea in the book that time is a magician, and every moment of life that passes pulls a disappearing act. In attempting to preserve these moments in poetry, I am trying to complete the illusion that time has begun: the reappearance after the disappearance."


HUGHES

The book will be published by Mercer University Press in 2018. Hughes has other poetry published in national and international literary journals. Here is her poem "My Father Holding His Father's Hand," which was published in *Juxtaprose Literary Magazine:*

As he takes his father's hand,
his father says, Forgive me,
I know you belong to me,
but I don't know your name.

His father's mind is a wind-up boat
caught on a stone in a creek.
If he could, my father would wade in,
free the toy on a clear path.

Standing knee-deep, he would see
for himself how swiftly the current
sweeps away all a man has ever
known, all a man belongs to.


PHIPPS

BUSINESS

One of the current projects of **Dr. Simone T. A. Phipps**, assistant professor of Management, examines the business of black beauty and whether it can be considered social entrepreneurship or a contributor to social injustice. "One of the pros of the black beauty industry is the creation of employment opportunities," Phipps says. "One of the cons is the potential loss of identity as individuals try to conform to a standard of beauty that may be very different from who they naturally are."

Phipps is examining the black beauty industry from a historical perspective by researching two of its early entrepreneurs, Annie Turnbo-Malone and Sarah Breedlove (Madame C.J. Walker). She has presented her research at the Academy of Management Annual Conference, and it is currently under review for journal publication.

HEALTH SCIENCES

William "Bill" Hervey, professor of Health Sciences, presented "Epidemiological criminology (Epicrim): A theoretical framework for domestic and global terrorism research and analysis" at the Society for Terrorism Research's 10th annual international conference held at The Hague, Netherlands.

Epidemiological criminology is already being used by Hervey and others in several real-life projects, including interventions for youth gangs in a number of large cities, as well as for prison gangs. It is the subject of a number of books, including two for which Hervey has provided chapters.

HERVEY

INFORMATION TECHNOLOGY


FLOYD

Dr. Kevin Floyd, chair of the School of Information Technology and Master of Science in IT coordinator, is conducting quantitative research to examine the psychometric properties of the Multifactor Leadership Questionnaire (MLQ). The results of the study will help identify what types of leadership are demonstrated in higher education. "This could help institutions to prepare appropriate leadership development or training programs for new administrators," Floyd says. "It will also add to the existing research that has been conducted to assess the reliability and validity of the MLQ."

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YERBY

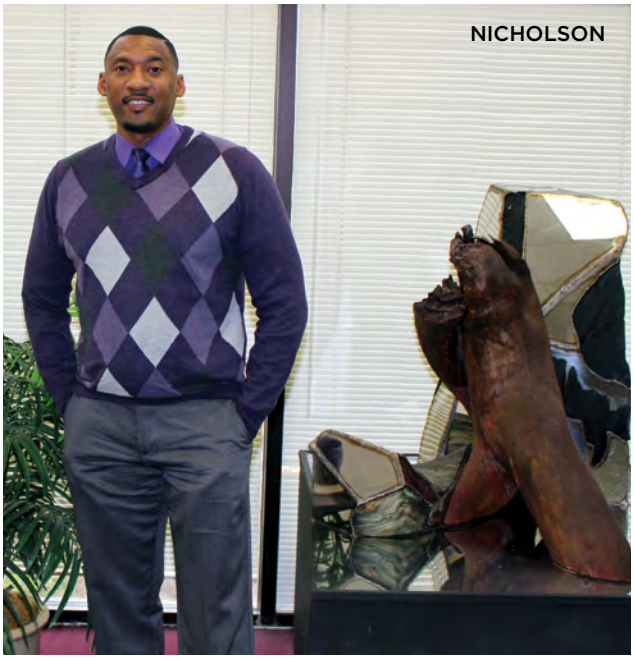
INFORMATION TECHNOLOGY

Dr. Johnathan Yerby, assistant professor of Information Technology, is wrapping up a study called "An Analysis of Presence in an Asynchronous Online Undergraduate Mastery Course Using Structural Equation Modeling," which examined three years of data in an online course. "The results of the study will help us improve instructional design strategies for online education," Yerby says.


WANG

Examining metabolites – the end products of biological processes – is a core part of many medical diagnoses. But it can be a "messy" business – the most popular analyzers produce data clouded by noisy returns. That's where MIDAS – a computational tool designed by **Dr. Yingfeng Wang** – comes into play. The MIDAS algorithm's golden touch is an on-the-fly comparison tool, matching analyzer output against a database of potential metabolites. Already heralded as state-of-the-art in metabolite analysis, MIDAS is a step towards the "key to developing accurate identification tools," says Wang, assistant professor of IT.

MEDIA, CULTURE AND THE ARTS


NICHOLSON

Have the roles of professional media and "citizen" journalists impacted the way some people perceive the Black Lives Matter movement? **Dr. Andre Nicholson**, assistant professor of New Media and Communications, said the movement began to raise awareness of patterns in law enforcement's treatment of minorities but is now considered by many to be an anti-police group.

"The conversation has not addressed the actual role of media and citizen journalists in the portrayal of images we witness of police and their interaction with African-American men," Nicholson says. "My research examines what role those issues play in the ongoing contentious relationship between law enforcement and African American men and in shaping perceptions of the movement."

Nicholson is scheduled to present his findings this spring at the Popular Culture Association national conference.

"Norman Mailer: Works & Days" is a digital humanities project for Mailer scholars and literary critics. The first major initiative of Project Mailer, which is an ongoing initiative to promote the legacy of one of the 20th century's most prolific writers, "Works & Days" assembles Mailer's major primary and secondary works and events in a searchable, multimodal database. This project is co-written by J. Michael Lennon, Mailer's official biographer, and built by **Dr. Gerald Lucas**, professor of English.

"Not only is this project for Mailer scholars, it is publicly accessible, allowing for the students and enthusiasts an introduction to Mailer studies and a key component for research," Lucas says.

Lucas has presented his work at the Norman Mailer Society annual conference. See "Works & Days" at http://worksdays.projectmailer.net.

LUCAS

MEDIA, CULTURE AND THE ARTS


SMITH

PSYCHOLOGY

"Testing," says **Cory Smith**, Psychology lecturer, "is how we get insight into an individual's behaviors, thoughts, intellect, achievement, and even competence." His workbook, currently under development with Kendall-Hunt Publishing, will provide students with anecdotes and vignettes from his 10 years' experience in psychological testing, as well as activities designed to assess their understanding of the concepts. "These stories bring concepts to life and offer students an opportunity to experience the field from an applied perspective," he says.

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