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DIVISION OF AGRICULTURE, FORESTRY,
AND VETERINARY MEDICINE

RESEARCH, EDUCATION, AND EXTENSION

MISSISSIPPI LANDMARKS

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VICE PRESIDENT'S LETTER



As we wrap up our summer projects and begin the fall semester, the MSU Starkville campus is buzzing with activity and excitement for our return to a more traditional college experience. We are looking

forward to seeing the smiling faces of our faculty, staff, and students in our hallways, on the Drill Field, and at football games.

While I've been part of the Bulldog family for more than 20 years, I feel a special enthusiasm this fall as the new vice president for the Division of Agriculture, Forestry, and Veterinary Medicine. I see with new eyes the amazing contributions we make to the university's research portfolio, high-quality coursework offerings, and needs-based outreach across the state. I also realize our potential for even greater scientific collaboration, community development, and academic achievement. Here are two noteworthy accomplishments: (1) During the coronavirus pandemic, DAFVM set a record for grants and contracts received; and (2) We set a record for student enrollment. Kudos to the faculty and staff who made this happen.

In April, we celebrated our graduates with modified in-person graduation ceremonies. No masks could hide the elation of the students, their family members, faculty, and administrators as, together, we marked this accomplishment made more impressive by the challenges met to achieve it. Within the division, the College of Agriculture and Life Sciences awarded 278 undergraduate and 40 graduate degrees; the College of Forest Resources awarded 77 undergraduate and 12 graduate degrees; and the College of Veterinary Medicine awarded 30 undergraduate and 97 graduate and professional degrees.

This issue of *Mississippi LandMarks* showcases the wide variety of work done by DAFVM personnel. From innovative solutions for continuing 4-H programming during the pandemic to long-range analysis of how floods impact deer, I'm proud of the work we do and appreciate your continued support for and interest in it.

On a personal note, I want to offer my sincere thanks to Dr. Reuben Moore for his service as the interim vice president for the division and the interim director of the Mississippi Agricultural and Forestry Experiment Station. His support has been invaluable to me over the years and most especially since I began this new role. Congratulations on your retirement, Dr. Moore, and best wishes!

A handwritten signature in black ink, appearing to read 'Keith Coble'.

KEITH H. COBLE
Vice President

CONTENTS

Volume 17 • Number 2 • August 2021



4	Let's Get Cooking	14	Shelter Medicine Program	24	Early-Maturing Peanut Varieties
6	Preserving the Past	16	Melatonin May Improve Calf Development	26	Alumni Fellows
8	Winter-Grown Oilseed Has Potential as Airline Fuel	18	Search for American Eels	27	1/82: Benton County
10	Empowering Women with Poultry Education	20	Pub Guides Students Through Geocaching	28	News Notes
12	Impact of River Flooding on Deer	22	Keep Belzoni Beautiful Gets Student Design Inspiration	30	Pug with Purpose

ON THE COVER

Fruit and vegetable production is one of the many enterprises supported by researchers and specialists in the Division of Agriculture, Forestry, and Veterinary Medicine. (Photo by Kevin Hudson)



Let's Get Cooking!

4-H'ers Learn with Hands-On Cooking Kits

Each month, Presley McMillian and other 4-H'ers can drop by their local Extension offices to pick up grab-and-go activity kits. These educational projects allow 4-H agents to keep their members involved while face-to-face meetings are postponed because of COVID-19.

The kits vary by county and include instructions and items to help complete each activity, such as Lego and robotics projects. In Tishomingo County, McMillian and her fellow 4-H'ers enjoy cooking kits.

"When agents in our district brainstormed ideas to keep our kids engaged, we thought the cooking kits would be a great project to work on at home with their families," said Emily Vestal, 4-H agent with the MSU Extension Service in Tishomingo County. "It gives them an opportunity to increase their culinary knowledge and skills and to gain a sense of accomplishment for successfully completing a project they enjoy."

Each kit includes a recipe, all the ingredients to make the recipe, a surprise cooking tool to use and keep, and educational materials on food safety and healthy cooking. Tools have included measuring spoons, measuring cups, and spatulas. Kits have featured recipes for magical fruit salad, chewy granola bars, and dessert lasagna.

McMillian, 17, said she looks forward to the kit each month.

"COVID took away a lot of stuff for everyone, especially 4-H," said McMillian, who has been in 4-H since she was 5 years old. "We can't get together like we normally do, and this is one way we can still participate in club activities."

First offered in fall 2020, the recipe kits became popular quickly. In the first week, 75 4-H'ers signed up to participate. Each month since, 65 to 75 kids have participated. General interest in 4-H in Tishomingo County has grown, too, Vestal said.

"We've had about 40 kids to sign up for 4-H as a result of their involvement in this project. We are very excited and pleased with the response," she said.



Caroline Makena Kobia (left), Aviel Baraka Nyatta, and Mishael Wema Nyatta use a 4-H grab-and-go cooking kit in Oktibbeha County. They are the family of Dr. Thomas Legiandenyi Nyatta, an Extension agent in Oktibbeha County.

McMillian has participated in several other cooking and food-related projects through the years, including the Cooking Club, the 4-H grilling contest, and various cooking projects at the county office, including making strawberry jam.

While each cooking kit is a fun activity, McMillian said they help her learn more about cooking for herself.

"I am trying to prepare for adulthood and going to college," she said. "I have learned a lot with the kits, like how to measure ingredients. I am dyslexic, and my mom helps me read

the directions, but I try to do it all on my own. I feel like the project has helped me."

McMillian has participated in the poultry project for several years and recently has gotten back into some horse projects.

"For me, 4-H has been great," she said. "4-H helps kids get out of their comfort zones. There is nothing 4-H can't do for someone. There is something for everyone, even people like me who have a learning disability. It is an inclusive organization. They don't divide kids. Everyone is treated the same."

BY SUSAN COLLINS-SMITH • PHOTOS BY KEVIN HUDSON



“It gives them an opportunity to increase their culinary knowledge and skills and to gain a sense of accomplishment for successfully completing a project they enjoy.”

EMILY VESTAL

Preserving the Past

Study Analyzes Benefits of Restoring Cultural Structures

Once thriving hotel and cultural hot spot in Clarksdale, Mississippi, now sits partially gutted and vacant, awaiting a day when it might be brought back to life.

The New Alcazar Hotel in Clarksdale is among many buildings in the region that appear on the National Register of Historic Places but are now in disrepair. A former Mississippi State graduate student in the College of Agriculture and Life Sciences analyzed the cultural and economic benefits of restoring structures like the Alcazar.

While completing her master’s degree in agricultural economics, Kaylee Wells used this analysis in her thesis research. The Alcazar Hotel was home to the WROX radio station, which featured Early Wright, Mississippi’s first African American deejay. The station hosted live musical performances by legends like Elvis Presley, B. B. King, and Ike Turner. Wells said the historical significance of the structure was one of the reasons she focused on it.

“I did some volunteering in the Delta as an undergraduate and saw a lot of historical buildings that were falling apart,” Wells said. “I thought that the reason they were falling apart might be because some of their value to society was not being captured in the market price.”

After the Mississippi Delta National Heritage Area agreed to fund her research, Wells looked through the Mississippi Heritage Trust’s lists of the 10 Most Endangered Historic Places in Mississippi for potential places to study. After singling out the Alcazar, she created a survey and sent it to 400 people in the state who signed up to participate through Qualtrics, an online survey tool.

“For estimating economic values, economists can use several different approaches,” said Dr. Matthew Interis, an associate professor of agricultural economics and Wells’s advisor. “This study combines two of those. One entails asking someone hypothetically in a survey whether they would be willing to pay some specified amount to see a specific thing happen.

The New Alcazar in Clarksdale could bring strong cultural and economic benefits if restored.



The other collects information on people who spend the time and money to go to the site.”

Survey responses determined that the benefits to Mississippi of restoring the Alcazar would be about \$17 million a year, and a typical Mississippian would be willing to pay an average of \$23 over 3 years to see the building restored.

Importantly, even respondents who never intended to visit the Alcazar Hotel themselves placed value on restoring the building. Such an evaluation is known in economics as a “nonuse value.”


“By combining these two data sets, you can disentangle the value of using and experiencing the site versus someone who has no plans to go there but likes the idea of preserving Mississippi culture or thinks their children or grandchildren might want to go there,” said Interis, who is also an economist

with the Mississippi Agricultural and Forestry Experiment Station.

Wells said she hopes the research is a starting point for identifying and possibly prioritizing similar restoration projects in the region.

“The goal is not to say whether the Alcazar was worthy of restoration or not, as a statement like that would require knowing the costs of restoring the hotel and also what alternative uses the plot might have if the hotel were razed or repurposed,” she said. “It’s just to provide information so people can make better decisions about how we are using our cultural resources. The Delta has a lot of these, but the question is which ones to restore. This is a first step in that direction.”

BY NATHAN GREGORY • PHOTO BY KEVIN HUDSON



“The goal is to provide information so people can make better decisions about how we are using our cultural resources.”

KAYLEE WELLS

Winter-Grown Oilseed

Has Potential as Airline Fuel



Brassica carinata flowers

An oilseed that can be turned into jet fuel with almost no processing is being examined as a well-timed winter cover crop for Mississippi fields.

Brassica carinata, also known as Ethiopian or Abyssinian mustard, produces an oilseed that has been used for thousands of years in the Middle East and Northern Africa. The plant is an upright broadleaf commonly compared to canola.

“The seed is the cash-crop opportunity, although it is also useful simply as a winter cover crop, and then it can be disked back into the soil before spring planting,” said Dr. Jesse Morrison, a researcher in the Mississippi Agricultural and Forestry Experiment Station (MAFES) and an assistant research professor in the MSU College of Agriculture and Life Sciences Department of Plant and Soil Sciences.

MSU has teamed up with researchers from the University of Florida working on a federal grant to determine the feasibility of growing *carinata* in the South as a cash crop.

Cover crops are useful for a variety of reasons. They help prevent erosion during rainy winters, they suppress weed establishment, and they capture and return nutrients to the soil. After seed harvest, *carinata* chaff and residue can be tilled into the soil, where it also helps control nematodes.

Cover crops are not typically grown for profit, and winter cash crops such as wheat usually are harvested midsummer,

limiting the crops that can be grown subsequently. *Carinata* has the potential to fit within Mississippi’s cover crop window and then bring an actual profit when it is harvested, leaving time for traditional spring crops to be planted.

“*Carinata* is unique in that it is not really any good for human consumption, but it can serve as a direct replacement for aviation fuel without being blended or refined much at all,” Morrison said.

Regional jets in Canada, where *carinata* is grown extensively in the summer, use a fuel blend that contains 20 to 30 percent *carinata* oil. Some flights have been made on *carinata* oil only, including one 15-hour transpacific flight from Los Angeles to Melbourne, Australia, in 2018.

“There’s a fairly established industry and market, but it’s been difficult to get the kind of production in place to allow the airline industry to commit to this source of fuel,” Morrison said.

In Mississippi, *carinata* is planted in September or October and harvested in April or May. The seeds mature in long, thin pods. Planting and harvest are done with standard row-crop equipment.

“What sets *carinata* apart and what makes it most attractive is the fact that it is a cool-season crop in the South,” Morrison said. “It is one of the few winter cash crops we can get in the ground, get up, and get harvested without interfering with the traditional summer crops.”

Morrison said the average cost of production is about \$275 an acre, which is a typical cost for row crops. Market price for this oilseed is generally \$8 to \$9 a bushel, meaning producers could net \$200 or more per acre from the winter cover crop.

Dr. Brian Baldwin, a MAFES researcher and professor in plant and soil sciences, said there is work to be done to market *carinata* oil grown in Mississippi.

“As a nonedible oil, *carinata* will not compete in the market against edible oils,” Baldwin said. “But that also is the biggest hurdle, as *carinata* needs separate crushing facilities, otherwise there is a cleaning process you would have to go through before you could crush soybean oil again.”

BY BONNIE COBLENTZ



Seed pods of *Brassica carinata* plants

“Carinata is unique in that it is not really any good for human consumption, but it can serve as a direct replacement for aviation fuel without being blended or refined much at all.”

DR. JESSE MORRISON



“The general population around the world needs science-based information just as much as Mississippi folks do.”

DR. TOM TABLER

Empowering Women

Poultry Education Boosts Food Security

Empowering women to be better poultry farmers has a direct benefit to their families and addresses the significant problem of food insecurity in Africa.

Dr. Tom Tabler, MSU Extension poultry specialist, joined forces with Dr. Margaret Khaitsa, MSU College of Veterinary Medicine epidemiologist, on a project to help African women provide more dependably for their families by becoming better chicken producers.

According to the United Nations Food and Agriculture Organization, women are responsible for half of the world’s food production. That number rises to 60–80 percent in most developing countries and 70–80 percent in sub-Saharan Africa.

“Despite these facts, women’s key role as food producers and providers and their critical contribution to household food security is only recently becoming recognized,” Khaitsa said.

“My passion is to empower women at many levels and integrate the results to change systems with a broad goal for empowering more women to self-sufficiency, better livelihoods, and community development,” she said.

MSU has partnered with the University of Tennessee (UT) in Knoxville; Sokoine University of Agriculture (SUA) in Morogoro, Tanzania; Columbus State University (CSU) in Columbus, Georgia; Makerere University (Mak) in Uganda; and Higher Education Resources Services, East Africa (HERS-EA), a non-governmental organization that advances women in that region, on this project funded by the USDA Foreign Agricultural Service.

Food insecurity is a major problem in many parts of Africa, and Tabler is leveraging his expertise and MSU resources to directly address the education problem. Efforts are aimed at



(Above) After initial training visits to Uganda, Tanzania, and Kenya, two MSU specialists are leveraging MSU resources to develop a curriculum that educates women smallholder farmers who raise chickens to provide food for their families and the community. (Submitted photo)

(Right) Laying hens provide protein for women and children in sub-Saharan Africa. Women are primarily responsible for food production in the region, but there is little educational support for them in this task. (Submitted photo)



women smallholder farmers who raise chickens to provide food for their families and communities.

“Chickens don’t take a lot of land or require a lot of food, and women are the ones who raise the chickens,” Tabler said. “There is an extreme shortage of Extension agents in Africa, and so there is no help for women to understand how to take care of chickens and what to do if they get sick.”

In the initial visit to Uganda, Tanzania, and Kenya, Tabler and faculty from UT, SUA, CSU, Mak, and HERS-EA developed a curriculum for training women smallholder poultry farmers. Topics included poultry nutrition, diseases, and biosecurity for hen layers, broilers, and breeders.

Since his return, he has developed six Extension publications on topics ranging from village chicken production to indigenous breeds. These documents are being translated into Swahili—the main language of the region—by collaborators at Sokoine University.

Support of international agriculture and food security are major focus areas of MSU as outlined by President Mark Keenum. Tabler and Khaitsa’s work in Africa acts on this priority and perfectly reflects Extension ideals.

“Part of Extension’s mission is to take research-based information and distribute it to the general population,” Tabler said. “The general population around the world needs

science-based information just as much as Mississippi folks do. This outreach to sub-Saharan Africa fits with MSU’s mission to be a leader in the international ag theater and is another opportunity to get Extension and MSU agriculture to other parts of the world.”

Numerous internal MSU and federal grants make this work possible. It began with the MSU International Institute and National Strategic Planning and Analysis Research Center and now extends through 2022 with USDA-FAS funding.

BY BONNIE COBLENTZ

“Our goal was to evaluate changes in animal condition in response to the extreme variations in flooding levels.”

DR. STEVE DEMARAIS

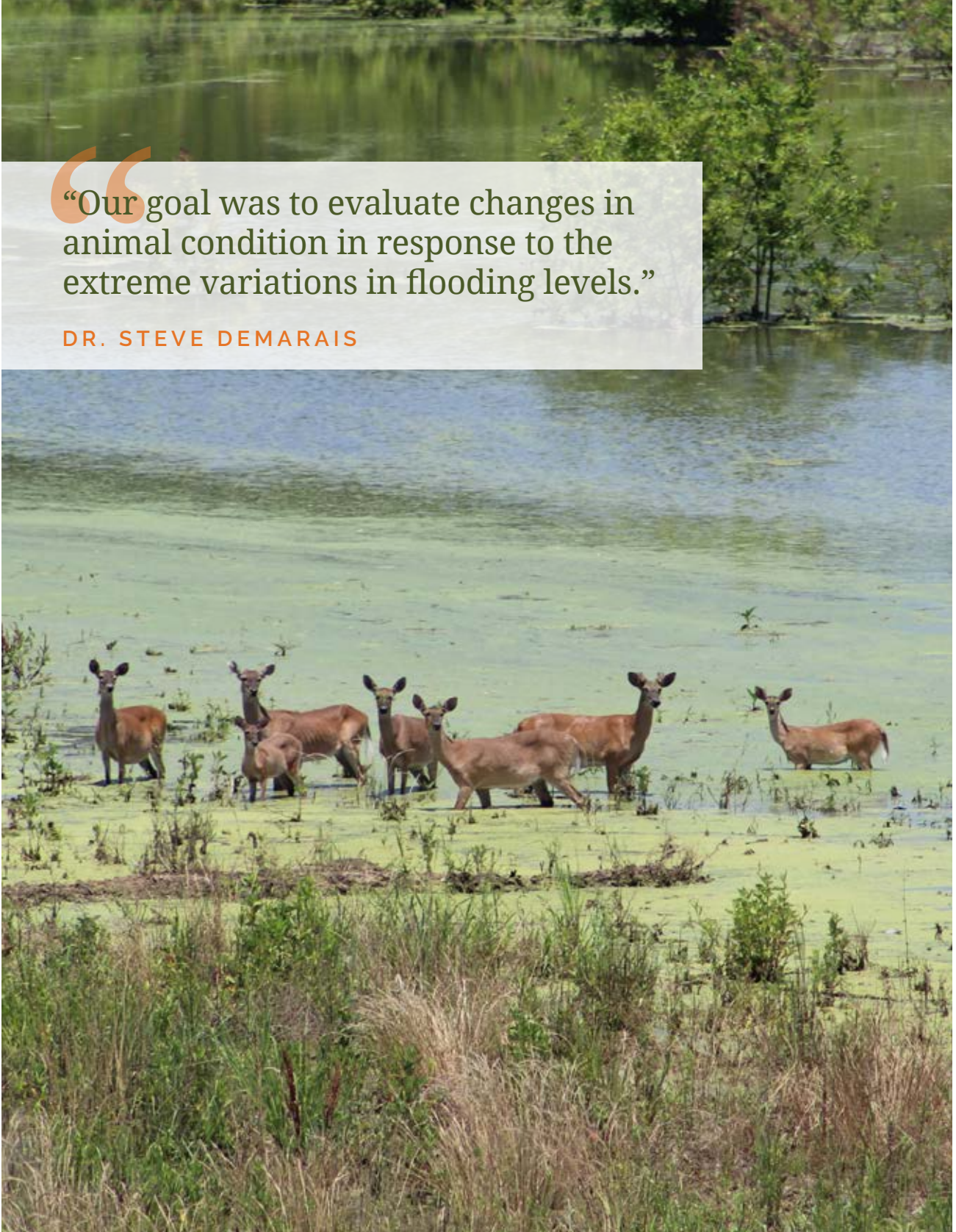


Photo by Pierce Young, Mississippi Department of Wildlife, Fisheries, and Parks

High Water

Research Measures Impact of River Flooding on Deer

Major land changes along the Mississippi River are affecting the prevalence of flooding, and Mississippi State researchers found it has an immediate negative impact on the region's deer.

Since 2018, MSU has been looking at the impacts of floods on deer in the Mississippi River batture (the strips of land between the normal riverbed and the levees). Researchers are mining current data and pulling from records kept since the 1970s.

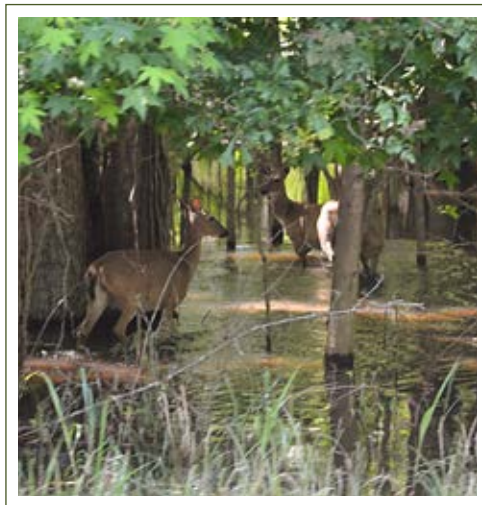
Their goal is to devise better management plans to improve the ability of deer and other wildlife to deal with these frequently occurring floods, said Dr. Steve Demarais, Taylor Endowed Chair in Applied Big Game Research and Instruction in the MSU Forest and Wildlife Research Center (FWRC).

Since the Mississippi River drains about 40 percent of the North American continent, significant land-use changes over the last decades have contributed to more water being funneled downstream. More water entering the river, along with levees that keep it from flooding cities and other areas, result in many days when the batture is flooded.

Demarais said MSU wildlife biologists have gathered data on 61 properties in the batture along the Mississippi River, primarily in Mississippi with some in Louisiana and Arkansas. From this huge database, they are detecting patterns that affect wildlife populations.

They counted the days the river spent above flood stage and looked at deer health from the perspective of buck antler size, doe body mass, and doe lactation, which identifies whether a doe has raised at least one fawn.

"Our goal was to evaluate changes in animal condition in response to the extreme variations in flooding levels," Demarais said.



Data show that deer do not fare well in flood years, but they tend to fare better than usual 1 year later. (Photo by Ricky Flynt, Mississippi Department of Wildlife, Fisheries, and Parks)

Data show that deer do not fare as well in flood years, said Dr. Bronson Strickland, an MSU Extension wildlife specialist and St. John Family Endowed Professor of Wildlife Management in the MSU Forest and Wildlife Research Center. They tend to fare better than usual 1 year later.

"In years with heavy spring flooding, bucks tend to lose some antler size," Strickland said. "We think that is because they have to leave the batture to avoid flooding and go share the spring green-up in another area with deer that already live there."

Data suggest there is an increase in antler size when there is summer river flooding during the previous year.

"Flooding is the natural process by which land is fertilized," Strickland said. "When the batture land is flooded and the waters recede, soil nutrients carried down the river are deposited. The next year, the vegetation responds positively, and the antlers get bigger."

Researchers found that doe weights and their ability to successfully raise a fawn follow this same pattern.

"What we learned is that flooding from previous years is generally positive, as there is an increase in plant growth," Strickland said.

"Current-year flooding has a very negative effect because the deer are dealing with it right now. As they are displaced and have a disrupted food supply, there is a loss of fawns, a reduced body weight, and smaller antler size."

Dr. Dana Morin, a quantitative ecologist in the FWRC, is leading a follow-up study to develop new methods for estimating deer population numbers for an area. Accurate counts are needed to fully assess the impacts of floods on the deer population of the batture.

BY BONNIE COBLENTZ

Shelter Medicine Program

Provides CVM Students Surgical Experience



Dr. Phil Bushby

When Dr. Phil Bushby launched the Shelter Medicine Program at the MSU College of Veterinary Medicine (CVM) in the early 1990s, he had no idea the program would one day be able to boast about performing more than 93,000 spay/neuter surgeries.

Getting the first mobile veterinary unit in 2007 allowed the program

to expand significantly. Now, 28 animal shelters and rescue organizations in the state benefit from the services that the students in this program provide as they practice.

“From the standpoint of giving students significant experience, the program really started in 2007,” Bushby said. “We were crawling along for about 15 years and then learned how to walk and run.”

The Shelter Medicine Program has two primary objectives: (1) providing juniors and seniors in the CVM program extensive experience performing surgery and (2) helping them understand problems associated with pet overpopulation and the struggles that shelters face dealing with surplus dogs and cats.

“It improves the health of the animals in these rescues and makes them more adoptable,” Bushby said. “We want to use this training to save animals’ lives and get them into people’s homes.”

Now a professor emeritus, Bushby has transitioned to a fundraising role for the program since his retirement in 2014. While the college covers the cost of faculty salaries, donations and grants cover the nearly \$300,000 annual cost of the materials and maintenance necessary to keep the program fully functional. These revenue streams allow the program to run free of charge to shelters.

Four full-time faculty members, including current program director Dr. Kimberly Woodruff, and two part-time faculty members staff the program.

The surgical suite on wheels allows 2-week student rotations, during which groups of seniors take to the road and learn high-quality, high-volume spay and neuter principles and techniques.

Dr. Travis Noto, a 2021 CVM graduate, credits the program with teaching him to perform procedures using smaller incisions, fewer instruments, and faster techniques.

“The program’s spay and neuter elective is one of the CVM’s best-kept secrets,” Noto said. “The professors help students with surgical techniques by refining surgical posture, minimizing extra movements, and solving problems during surgery. This all leads to better quality, faster surgery times, and minimized risk and postoperative pain. These techniques are proven, safe, and easily implemented in a private-practice setting.”

For 13 years, students have participated in the units almost year-round. A second mobile unit came on board in 2013, and the original was retired in 2018. A building next to the CVM facility was renovated as a spay/neuter clinic, complete with a treatment room, surgery room, and holding facility.

Since the beginning of the COVID-19 pandemic, the mobile unit has been stationed at the Oktibbeha County Humane Society functioning as a second stationary clinic. Area shelters bring animals to each location for procedures.

To make a gift in support of the program, contact CVM Development Director Jimmy Kight at (662) 325-5893 or jkight@foundation.msstate.edu.

BY NATHAN GREGORY • PHOTOS BY TOM THOMPSON




“It improves the health of the animals in these rescues and makes them more adoptable. We want to use this training to save animals’ lives and get them into people’s homes.”

DR. PHIL BUSHBY

An MSU CVM student conducts surgery under the guidance of Dr. Kimberly Woodruff (top photo, left). The CVM Shelter Medicine Program expanded with the introduction of the first Mobile Veterinary Clinic in 2007 (bottom photo, right) and the second unit in 2013 and now boasts its own dedicated surgical suite onsite at the Wise Center.





“We predicted that higher melatonin would shift blood and nutrients to the uterus, which has held true in both sheep and cattle studies to date.”

DR. CALEB LEMLEY

By studying cattle placentas, Dr. Caleb Lemley (right) and Zuly Contreras-Correa found that supplementing pregnant cows with melatonin increased total uterine blood flow, allowing more nutrients to reach developing calves.

Melatonin Supplement May Improve

Calf Development

Melatonin, a sleep-promoting hormone that mammals naturally produce at night, seems to also make mother cows more likely to produce healthy calves that develop well.

Data from an MSU study indicate that melatonin supplementation in a cow's diet during the third trimester of its pregnancy helps calves achieve proper birth weight. In the long term, melatonin also improves calf health and helps them gain weight well, which results in ideal muscle and organ development.

Dr. Caleb Lemley is a Mississippi Agricultural and Forestry Experiment Station researcher in the MSU Department of Animal and Dairy Sciences. He said the studies at MSU in dairy and beef heifers expand on work done in North Dakota in 2010 with nutrient-restricted sheep.

"Melatonin is a circadian hormone, meaning it increases dramatically during the nighttime and decreases during the daytime," Lemley said. "We predicted that higher melatonin would shift blood and nutrients to the uterus, which has held true in both sheep and cattle studies to date."

In addition to aiding sleep in humans, melatonin increases blood flow to the uterus during the last trimester of a cow's pregnancy. The effect on calves is a higher weight at weaning.

"We can affect their growth because we changed something in their diet," Lemley said.

In the current study, researchers supplement pregnant cows with melatonin at feeding and then examine uterine blood flow. They also collect placentas to examine how efficient the uterus was at transferring nutrients to the fetus.

Of particular interest is what happens to calves from cows that are nutrient-restricted and supplemented with melatonin in the last half of their pregnancies. Poor pasture condition and limited supplemental feed can restrict nutrients to a pregnant cow. In the Southeast, heat stress can contribute to nutrient

restriction, as hot cows do not eat as well as cows that are not under stress.

"Most fetal growth happens in the third trimester," Lemley said. "Nutrient restriction or heat stress at this time compromises the pregnancy and can lead to underdevelopment of the fetus and a calf that can succumb to illness later in life."

Zuly Contreras-Correa is a doctoral student from Puerto Rico who is involved in this project. She is pursuing a degree in reproductive physiology in the College of Agriculture and Life Sciences Department of Animal and Dairy Sciences.

"The placenta is a transient organ responsible for the oxygen, nutrient, and waste exchange between the dam and the fetus; therefore, its efficiency is essential to obtain healthy offspring," Contreras-Correa said.

She explained how supplements were used to determine whether melatonin counteracted the effects of a reduced-nutrient diet on heifers and their calves. In studies conducted in the winter and summer with 54 Brangus heifers, researchers added melatonin to the cows' diets for 80 days during late pregnancy. They collected data on vaginal temperature and used Doppler ultrasound to calculate uterine blood flow.

"We found that melatonin supplementation during the summer prevented a drastic increase in vaginal temperatures and that its supplementation increased the total uterine blood flow," Contreras-Correa said.

As typically happens in research, one set of answers opens the door to new questions. Contreras-Correa said further studies could evaluate the potential of melatonin supplementation during warm months for mitigating heat stress in farm animals. Another future step is determining the best time of day to supplement melatonin in cattle diets.

BY BONNIE COBLENTZ • PHOTO BY KEVIN HUDSON

“I was looking for local fish that hadn't been observed recently, and American eels are getting on the radar in the Southeast because of successful fisheries in Maine and North Carolina.”

DR. MIKE COLVIN



Researchers Haley Blische (left), Dr. Corey Dunn, and Dr. Mike Colvin use various techniques to catch American eels, including this promar trap, which is baited with worms, dead fish, and shrimp. (Photo by Michaela Parker)

From the Sargasso Sea to the Noxubee River

The Search for American Eels

When Haley Blische pulled the last trap of the day out of the Noxubee River, she expected to see the usual: a couple of bream with their rounded backs and maybe a crawfish. Instead, she had caught the first recorded sample of an American eel in this river since the 1980s.

“Eels are very slimy,” she observed. “They’re very hard to handle by yourself; unfortunately, when I caught mine, I was by myself. They are very hardy fish, so, luckily, keeping it out of the water did not adversely affect it. I basically had to wrestle it to take a measurement and was completely covered in slime by the end of it!”

Blische of White Hall, Maryland, is a senior majoring in wildlife, fisheries, and aquaculture in the MSU College of Forest Resources. She is part of an undergraduate research project with Dr. Mike Colvin, an associate professor in the MSU Forest and Wildlife Research Center, and Dr. Corey Dunn, a fisheries biologist with the U.S. Geological Survey and assistant unit leader of the Mississippi Cooperative Fish and Wildlife Research Unit.

“My project is focused on capturing American eels in an unpredictable river,” she explained. “The Noxubee River is composed of many wadeable and nonwadeable areas. We needed to find a way to sample these various sites.”

Under the supervision of Colvin and Dunn, Blische tried various traps and nets to see which were the most successful. She tended the traps at least every 24 hours in order to comply with the Institutional Animal Care and Use Committee protocol for studying animals. This protocol prevents inadvertently harming other creatures, such as turtles, that might get caught in the traps.

Colvin said the idea for the project came from the growth of a market for eels in Japan.

“I was looking for local fish that hadn’t been observed recently, and American eels are getting on the radar in the Southeast because of successful fisheries in Maine and North Carolina,” Colvin explained. “Fishermen catch small eels and send them to Japan to be grown out, and then they are harvested for a traditional ingredient that’s very common in Japanese cooking, called unagi.”

American eels spawn in the Sargasso Sea, and juveniles return to coastal freshwater streams to grow to adulthood, a process that lasts several years. They migrate back to the ocean to spawn and die. Juvenile eels, called glass eels or elvers, are such a profitable commodity that they are commonly poached and sold on the black market.

Before the pandemic, glass eels sold for about \$2,000 per pound. Prices plummeted in 2020 as the restaurant market vanished but are expected to increase throughout 2021.

The researchers still have a lot of work ahead of them.

“After Haley caught her eel, we looked at the statewide record,”

Colvin shared. “Eels seem to be around but difficult to catch, not just in the Noxubee River but all across the state.

“Haley was lucky to catch the first one in almost 40 years,” he added. “She caught the first one, but it isn’t for a lack of sampling. We may not be looking in the right places, or we might not have the right gear. They may be more prevalent than we think.”

BY KERI COLLINS LEWIS



An American eel captured in the Noxubee River in November 2020 is the first official record of an eel capture in that river since the 1980s. (Submitted photo)

Extension Pub Guides Young People Through Geocaching

Encouraging younger generations to spend more time outside can be especially challenging during a pandemic, as they have a built-in excuse to stay home.

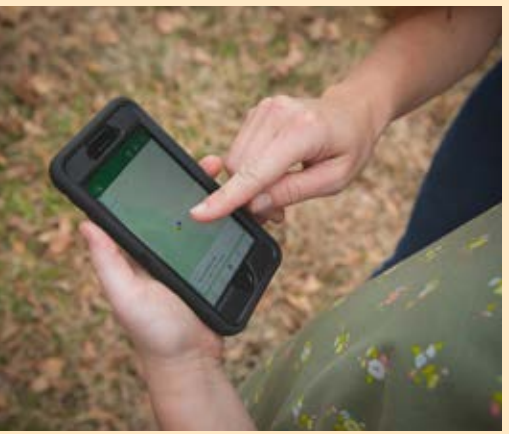
Dr. Brady Self, MSU Extension forestry specialist, had this reluctance in mind when he developed a socially distanced way for families to use periods of isolation to explore the outdoors. The result of his work was a new Extension publication, *Geocaching in Natural Resources: Fun with Forests around Us*.

Geocaching involves searching for hidden georeferenced “caches” using GPS technology. Newcomers to the activity get started by logging onto Geocaching.com. Then they register and access a map, either on the smartphone app or by downloading data directly to a GPS unit.

“Think of the game as a modern-day scavenger hunt,” Self said. “You use a set of clues to guide you into the final location of the ‘treasure cache.’ The biggest difference in the case of geocaching is that the initial stage of the hunt uses georeferencing to get you in the vicinity of the cache.”

Faculty in the MSU College of Forest Resources serve Extension by conducting educational programs, writing publications, and providing other educational activities. Self developed the publication to create a stronger link between the department and youth-related programming.

“We participate in multiple events where young people are introduced to a variety of natural-resource management concepts, but we rarely control these events,” Self said. “We wanted to offer something that met the criteria of being new, fun, and ‘ours,’ so to speak.”



Dr. Brady Self (back row, right) and his family members James Self (front row, left), Eli Self, Noelle Self, Arty Self, Decklen Hancock, Sarah Self (back row, left), and Hanna Self participate in a geocaching expedition.

By game rules, geocaches cannot be buried unless specifically permitted by the owner of the property where the cache is located. Even then, rules exclude requiring a searcher to dig. Geocaches are typically hidden behind, under, inside, on top of, or near another object noted in the instructions.

“The classic, traditional geocache is a military surplus ammo can or similar container, but now caches range from physical to virtual and from micro caches as small as a pencil eraser to others as large as an old phone booth,” Self said.

Gameplay can be “secretive,” as he puts it. Geocachers often contact one another through a messaging service the membership provides.

Self said he and his wife enjoy geocaching with their children.

“We wanted to get them involved in something both educational and outdoor-related and started geocaching with them a couple of years ago,” he said. “They love it, and the concept for turning the game into a workshop developed out of that.”

He hosted the first workshop for a 4-H club in Tate County, where volunteer leader Jennifer Kowalski plans to use the activity to get her group members more involved with nature.

“Geocaching is a hands-on activity, so I think young people working together and having someone guide them through the setup steps is better than reading them on a web page on their own,” Kowalski said. “I knew so many people that were out geocaching during COVID-19 because it got them outdoors without being in big groups. I love that it’s an activity that all generations can do and that it has a focus on the environment.”

View the publication online at <http://extension.msstate.edu/publications/geocaching-natural-resources-fun-forests-around-us>.

BY NATHAN GREGORY • PHOTOS BY MICHAELA PARKER



“We wanted to get them involved in something both educational and outdoor-related. The concept for turning the game into a workshop developed out of that.”

DR. BRADY SELF

Keep Belzoni Beautiful

Gets Student Design Inspiration

Through a partnership with Mississippi State, the Keep Belzoni Beautiful committee is turning a piece of unused downtown property into a community garden space to improve access to fresh fruits and vegetables.

Committee members worked with the MSU Extension AIM for CHangE program and the MSU Department of Landscape Architecture to expand plans for the garden and create a separate pocket park on another piece of property.

“This is a project we discussed implementing for a few years,” said Chandra Hines, executive director of Keep Belzoni Beautiful and planning coordinator for the Belzoni Community Garden. “When we heard about AIM for CHangE, we knew this program would make it possible for us to move forward.”

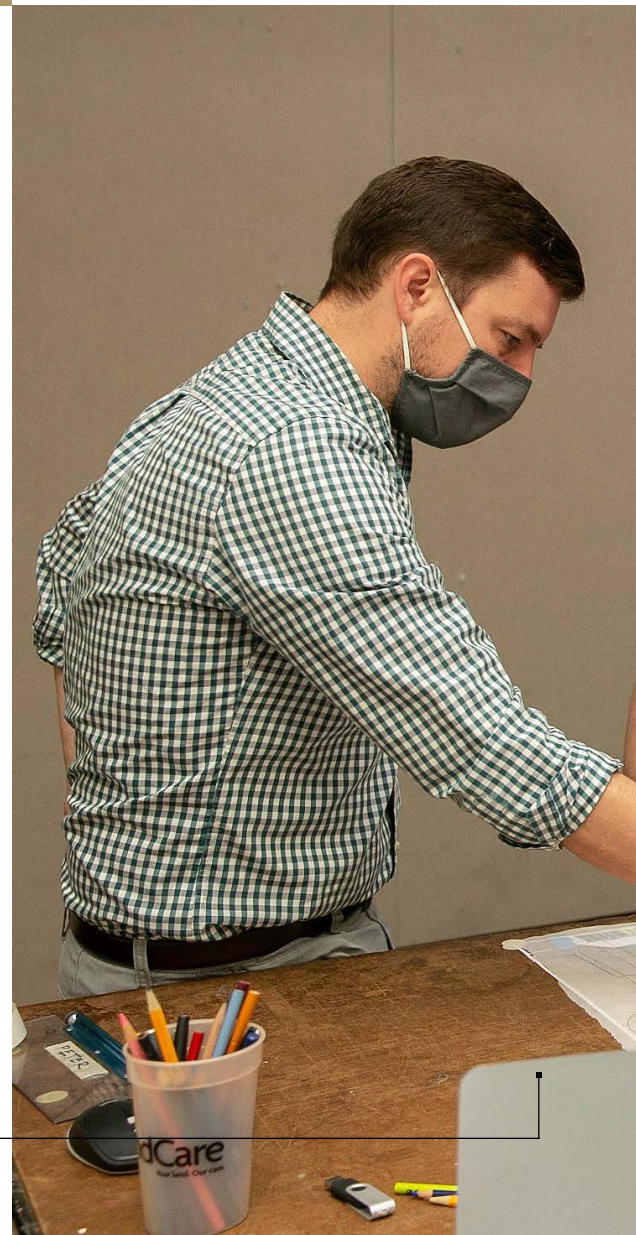
AIM for CHangE is an acronym for Advancing, Inspiring, Motivating for Community Health through Extension. Program leaders partner with community stakeholders to fight obesity and related chronic diseases by addressing ways to provide outdoor recreation, community walkability, access to healthier foods, and educational programming.

“We are hopeful the garden will foster unity in the community as we work together to create a space that promotes physical health through exercise, nutritional health through access to fresh fruits and vegetables, and mental health through having a relaxing, beautiful space to unwind and socialize with neighbors,” Hines said.

To help bring this vision to life, 11 students in Peter Summerlin’s senior landscape-architecture class created a conceptual master plan design for the garden and park.

“When we heard about AIM for CHangE, we knew this program would make it possible for us to move forward.”

CHANDRA HINES



“In the landscape-architecture department, we like to introduce a service-learning component for our students when we can,” said Summerlin, an associate professor of landscape architecture in the College of Agriculture and Life Sciences who has extensive experience in community-development projects.

“For the community, even though the drawings are not something you could immediately use to build the design elements, the committee can easily have them converted to a document that a builder could use,” he said. “They also provide communities a great visual to help people see what the end result could look like, and that helps with fundraising.”

Although COVID-19 reduced the number of volunteers for the project, progress has been steady since construction began in fall 2019. With help from community members and volunteers, including an Extension-trained Master Gardener and members of the AmeriCorps civil-service program, they have built several raised beds and a fence and have acquired four mobile hoop houses.

At a little more than 16,000 square feet, the lot that houses the garden has plenty of room for other gardening, educational, and recreational activities. The long-range plan is to install a walking track around the garden.

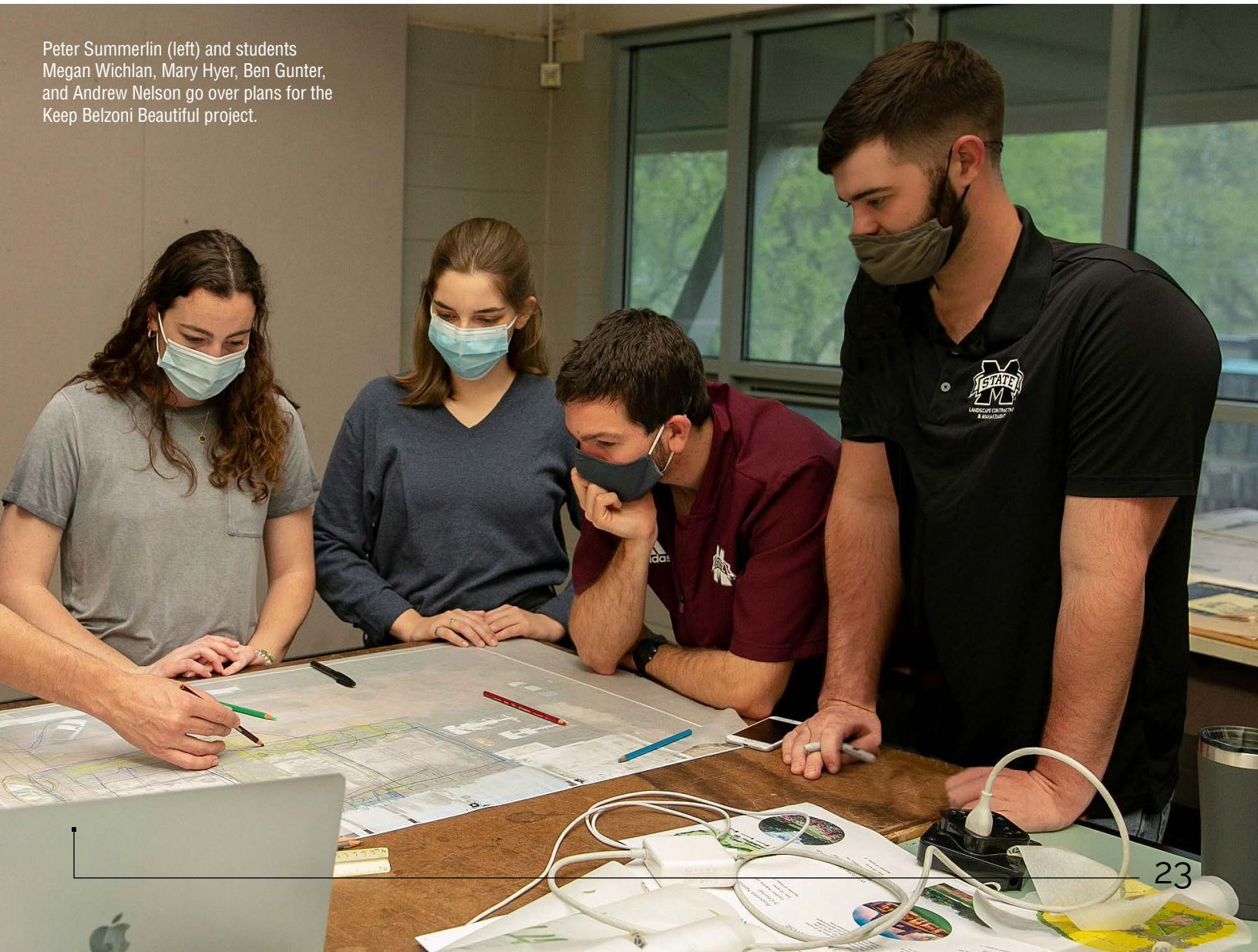
Regina Boykins, an Extension agent in Humphreys County and member of the Keep Belzoni Beautiful committee, said the property is in an ideal location.

“It’s one of those everyday destinations that is easily accessible for people,” she said. “We are grateful for the AIM for CHangE grant and the work the students did to help us plan the spaces as multiuse areas. We want this project to help fulfill the vision that we have for this place, which is to improve the physical, mental, and social well-being of the citizens of Humphreys County.”

The 5-year AIM for CHangE program is in its third year and is funded by a \$5.5 million grant from the U.S. Centers for Disease Control and Prevention.

BY SUSAN COLLINS-SMITH • PHOTOS BY MICHAELA PARKER

Peter Summerlin (left) and students Megan Wichlan, Mary Hyer, Ben Gunter, and Andrew Nelson go over plans for the Keep Belzoni Beautiful project.



“We hope to find three to four promising varieties each year and move them through the process to maintain a continual breeding pipeline.”

DR. BRENDAN ZURWELLER

Rise and Shine

Scientists Seek Early-Maturing Peanut Varieties

Harvest is one of the greatest challenges for peanut growers.

Unlike other row crops in Mississippi, peanuts require a two-pass system: one pass to dig and another to combine. Harvest speeds are also slower in comparison to other row crops, which means farmers have a small window for finishing the season and little room for unexpected delays.

To help address this issue, MSU scientists are testing new peanut varieties in hopes of finding an early-maturing option to help the state’s peanut producers.

Dr. Brendan Zurweller, an assistant professor in the Mississippi Agricultural and Forestry Experiment Station and a peanut specialist with the MSU Extension Service, said harvest capacity often determines a producer’s peanut acreage.

“We want to find varieties that mature 10 to 14 days sooner, which would allow growers to begin harvest earlier,” he said. “Extending the harvest window would help reduce some of the risk. If we get bad weather, it buys more time.”

Starting harvest earlier also could allow farmers to increase the number of acres they plant without having to invest in additional equipment.





Malcolm Broome (left), executive director of the Mississippi Peanut Growers Association, meets with Dr. Brendan Zurweller, peanut researcher and specialist.

Historically, Mississippians have relied on varieties and production methods developed for south Georgia, south Alabama, and northwest Florida. For growers farther away from the coast, the potential growing season shortens.

Zurweller works with breeders with the International Peanut Group and the University of Florida to evaluate unreleased cultivars developed for earlier maturity and other important agronomic traits.

The evaluation process involves pulling peanut plants, picking off all the pods, and pressure-washing them to remove the outer layer of the pod to reveal the middle layer.

“We’ll see a range of colors from white to yellow to orange to brown to black,” he said. “Black and brown are more mature, and that’s what we hope to see.”

Zurweller and his team report differences among the various plant lines to the breeders. As they identify promising plants, they will scale up to larger, on-farm plantings.

“We hope to find three to four promising varieties each year and move them through the process,” he said. “This allows us to maintain a continual breeding pipeline to

evaluate, select, and advance peanut varieties so we can release a commercial cultivar.”

This research is funded in part by the Mississippi Peanut Promotion Board.

“Mississippi growers have contributed some \$2.5 million in funding to peanut research since 2010,” said Malcolm Broome, executive director of the Mississippi Peanut Growers Association. “The growers pay a check-off fee per ton when they sell their peanuts, and that fee goes to the Mississippi Peanut Promotion Board.”

Research needs are based on grower requests for information on different agronomic practices, peanut varieties, and new crop-protection products, Broome explained.

“Most years, four or five proposals can be funded, and, in some cases, the proposals are for 3-year projects,” Broome said. “The promotion board’s board of directors review and select proposals based on grower requests.”

To learn more about the peanut industry in Mississippi, visit www.misspeanuts.com.

BY KERI COLLINS LEWIS • PHOTOS BY KEVIN HUDSON



John R. Lundy



Russell W. "Rusty" Booker Jr.



Dr. Ruth Francis-Floyd



Dr. Lisa Sharp Newcomb

Division Honors Outstanding Alumni

MSU's 2021 alumni of the year include three graduates from DAFVM colleges. Selected from among more than 150,000 living alumni for their professional and community achievements, they joined honorees from the university's other colleges in being saluted by the MSU Alumni Association.

John R. Lundy of Ridgeland, Mississippi, is alumnus of the year for the College of Agriculture and Life Sciences. A native of Tribbett, Mississippi, Lundy graduated with a bachelor's degree in agricultural economics in 1983. He began his career at the Delta Research and Extension Center and later served as a loan officer at First South Production Credit Association in Greenville, Mississippi. In 1987, he began an 11-year stint on Capitol Hill, where he worked for Congressman Mike Espy of Mississippi, Congressman Larry Combest of Texas, and U.S. Senate Majority Leader Trent Lott of Mississippi. Lundy returned to Mississippi and became a partner at Capitol Resources in Jackson. He currently serves on the MSU Foundation board of directors.

Russell W. "Rusty" Booker Jr. of Grove Hill, Alabama, is alumnus of the year for the College of Forest Resources. Booker earned a bachelor's degree in forestry in 1991. He has worked for several companies, including Chesapeake Forest Products Company, International Paper, Drax Biomass International, and Weyerhaeuser. At International, he helped design and institute a better supply strategy, after which he was awarded the inaugural Catalyst Award in the Forest Resources Division. Booker now serves as president of Scotch Land Management in Fulton, Alabama.

Dr. Ruth Francis-Floyd of Gainesville, Florida, is the alumna of the year for the College of Veterinary Medicine (CVM). A California native raised in Florida, Floyd earned a bachelor's degree from St. Olaf College and a DVM from the University of Florida (UF). She realized her interest in aquaculture while working as a vet tech at a large aquarium, which led her to pursue post-DVM studies and clinical experience in this field at MSU. In 1985, she became the first student to earn a master's degree from CVM. Floyd spent 2 years as a catfish researcher at the Delta Branch Experiment Station before joining the UF faculty. She is a former director of the Aquatic Animal Health Program and now serves as professor and Extension specialist for aquatic medicine at UF.

The Alumni Association also honored three alumni with the Distinguished Service Award, which recognizes those who display outstanding volunteerism and leadership in their alumni chapters. **Dr. Lisa Sharp Newcomb**, a 1984 CVM graduate, is among this year's recipients.

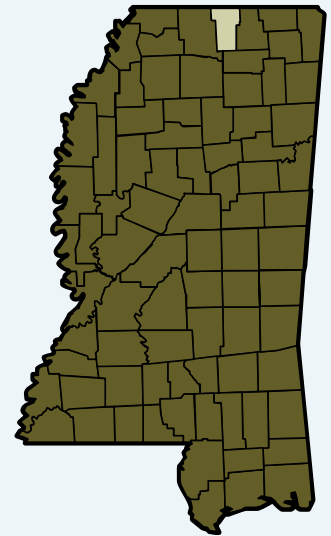
After graduation, Newcomb opened South Panola Veterinary Hospital in Batesville, Mississippi, with her husband and fellow CVM graduate, Harold Newcomb. Since 1991, she has held many positions, including president, with the Panola County alumni chapter and is a longtime member of the Bulldog Club. She has served on the Alumni National Board and been involved with the Alumni Recruitment Network since its inception. Newcomb frequently mentors MSU veterinary students and has served on the CVM accreditation team, admissions teams, and dean's liaison committee. Newcomb is a past president of the Mississippi Veterinary Medical Association and is involved with the Mississippi Animal Response Team and the Mississippi Veterinary Corps.

For more on the MSU Alumni Association and the recent 2021 awards banquet, visit alumni.msstate.edu.

BY ADDIE MAYFIELD



The Benton County Courthouse serves as headquarters for the Benton County Historical Society and Museum and the Ashland-Benton County Historic Preservation Commission. (Photo by Michaela Parker)



1/82: Benton County

MSU in Benton County:

382 Ripley Ave.
Ashland, MS 38603
benton@ext.msstate.edu

County seat:	Ashland
Population:	8,259
Municipalities:	Ashland, Hickory Flat, Snow Lake Shores
Communities:	Canaan, Hopewell, Lamar, Floyd, Winborn
Commodities:	corn, soybeans, cotton, cattle, forestry
Industries:	TCI Automotive, Iron Crafters, Abby Manufacturing
Attractions:	Benton County Historic Courthouse and Museum, Holly Springs National Forest, Arella Farm
Natural resources:	hardwood forest, pine plantations, abundant wildlife, Wolf River, Tippah River
History notes:	Benton County was organized during Reconstruction from sections of neighboring Marshall and Tippah Counties. Founded in 1870, the county comprises land formerly belonging to the Chickasaw Nation. The county is believed to be named after Confederate General Samuel Benton, who was from Holly Springs and died during the Civil War. In 1934, Benton County became one of the first counties to receive electric power from the Tennessee Valley Authority.

Did you know? Sally James Dickerson lived near the Benton-Tippah County line. Though most people won't recognize her name, most have heard of her nephews: the notorious outlaws Jesse and Frank James. The James brothers were spotted passing through Ashland while visiting their aunt.

“Benton County offers a quiet, small-town setting and abundant opportunities to enjoy the great outdoors. The people of this county make it second to none!”

HUNTER NULL, MSU Extension County Coordinator

Editor's note: 1/82 is a regular feature highlighting one of Mississippi's 82 counties.

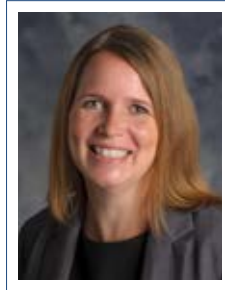
NewsNotes



Reynolds

Dr. Daniel B. Reynolds, a weed science professor in the Department of Plant and Soil Sciences with a three-way appointment shared by the College of Agriculture and Life Sciences, the Mississippi Agricultural and Forestry Experiment Station, and MSU Extension, has been named associate vice president for international programs and executive

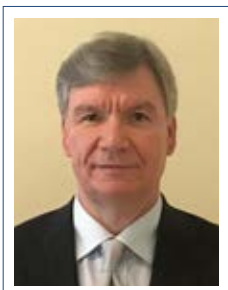
director of the university's International Institute. Reynolds has led MSU's international initiatives on an interim basis since April 2020.



Evans

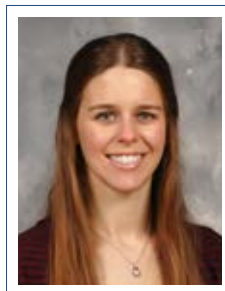
Dr. Kristine Evans, an assistant professor in the College of Forest Resources Department of Wildlife, Fisheries, and Aquaculture, received the Outstanding Paper Award by the Weed Science Society of America. The paper, *Evaluating Landscape Characteristics of Predicted Hotspots for Plant Invasions*, represents the culmination of more than a year's

work developing models of distributions of several dozen invasive plants in the region.



Harri

Dr. Ardian Harri, a professor in the College of Agriculture and Life Sciences was named interim head of the Department of Agricultural Economics. Harri, who has worked at MSU since 2004, has received several awards, including the College of Agriculture and Life Sciences Excellence in Graduate Teaching Award.



Melanson

Dr. Rebecca Melanson, Extension plant pathologist and assistant professor in the College of Agriculture and Life Sciences Department of Biochemistry, Molecular Biology, Entomology, and Plant Pathology, received the 2021 Southern Region IPM Center Friends of IPM – Future Leader Award.



Ayers

Dr. Chris Ayers, an instructor in the College of Forest Resources Department of Wildlife, Fisheries, and Aquaculture, received a Zacharias Early Career Award for Outstanding Teaching, the highest undergraduate teaching award that MSU can bestow upon its faculty members.



Baldwin



Rushing

Dr. Brian Baldwin, a professor of agronomy in the Mississippi Agricultural and Forestry Experiment Station, and **Dr. Brett Rushing**, an associate professor for MSU Extension and the Mississippi Agricultural and Forestry Experiment Station, both in the Department of Plant and Soil Sciences, were awarded a U.S. Department of Agriculture Plant Variety Protection Certificate for their Espresso Switchgrass.



Devost-Burnett

Dr. Derris Devost-Burnett, an assistant professor in the College of Agriculture and Life Sciences Department of Animal and Dairy Sciences was recognized with the Institutions of Higher Learning Diversity Award.



Karunakaran

Dr. Ganesh Karunakaran, an assistant research professor of aquaculture with the Mississippi Agricultural and Forestry Experiment Station, will lead a team of nearly a dozen university researchers from eight institutions in the project “Economic Status and Contribution of U.S. Aquaculture:

Analyzing Viability, Economic Impact, and Management Measures for Future Success.”



Willard

Dr. Scott Willard, interim dean of the College of Agriculture and Life Sciences, received the Love of Learning award from the collegiate honor society Phi Kappa Phi for his academic contributions and achievements.

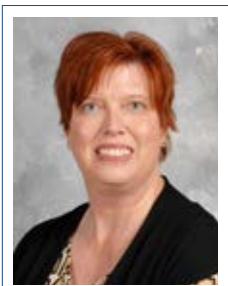
Several horticulture experts and faculty in the Department of Plant and Soil Sciences received awards from the Southern Region of the American Society for Horticultural Science.



Bachman



Broderick



Coker



Wilson

Drs. Gary Bachman (Extension/Experiment Station), **Shaun Broderick** (Extension/Experiment Station), **Christine Coker** (Extension/Experiment Station), and **Jeff Wilson** (Extension) received the Extension Communications Blue Ribbon Award for their publication *2020 Mississippi Medallion Plants*.



Stafne

Dr. Eric Stafne (Extension/Experiment Station) was named the Miller Distinguished Researcher for his outstanding record of horticultural research for at least 10 years.



DelPrince

Dr. Jim DelPrince (Extension) received the Extension Communications Blue Ribbon Award.



Bachman

Dr. Gary Bachman (Extension/Experiment Station) received the Covington Extension Award in honor of valuable contributions in Extension horticultural activities in areas such as commercial production, processing or marketing, home grounds, and youth work.

DevelopmentCorner



Submitted photo

Pug with Purpose:

How One Dog's Legacy Benefits MSU-CVM

After years of pleading with their landlord for permission to have a dog, Dr. Emily Freeman and Sara Bishop got the green light. They could not have known how much a 2-pound pug would change their lives.

“Maggie was a source of light and inspiration,” Freeman remembered. “She made people smile. She was unusually empathetic and could read people’s emotions really well. She was a special animal who flipped our world upside down.”

Freeman and Bishop’s dedication, along with extraordinary veterinary care, helped their beloved pug live 16.5 years—more than 2 years longer than the breed’s average life expectancy.

“During the last 5 years of her life, we spent a lot of time at the vet’s office,” Freeman explained. “By the time we said goodbye to her in October 2019, she had very complex medical

records. We got to know the veterinary community very well. They fought for her.”

Consequently, Freeman and Bishop became aware of the struggles that veterinarians and their staff members face.

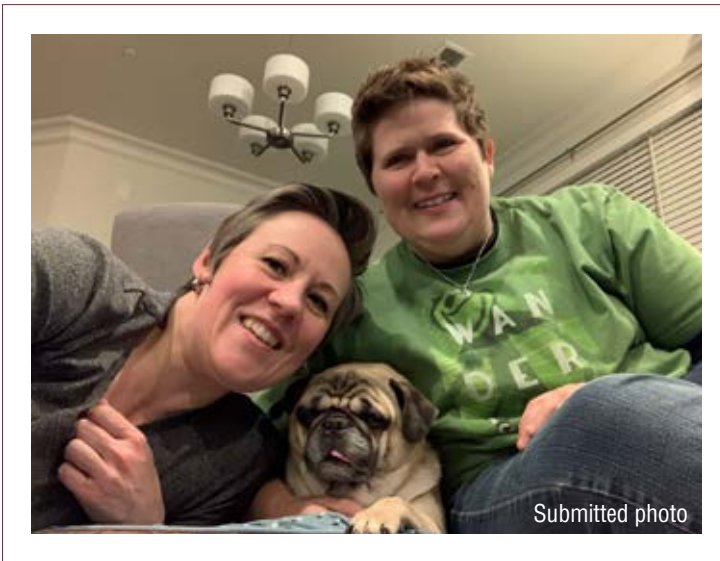
“It hit us one night at a clinic in Illinois where they saved her life,” Freeman said. “Two employees had reached the breaking point and were about to be admitted to a mental-health facility. They turned our worst day into not such a bad day, but they were no longer able to cope with the stress.”

Freeman got her bachelor’s and master’s degrees in geosciences from Mississippi State in 1996 and 1998 before obtaining her doctorate

from McMaster University in Ontario, Canada. She works as a health geographer and recently discovered the MSU College of Veterinary Medicine while talking to a friend who still lives in the area.

“We got to know the veterinary community very well. They fought for her.”

DR. EMILY FREEMAN



Sara Bishop (left) and Emily Freeman (right) honored their dog, Maggie Freeman-Bishop, with a gift to the MSU College of Veterinary Medicine.

“We wanted her spirit to spark something that will help the people who care for animals.”

SARA BISHOP

“Sara and I wanted to do something to help the people who helped Maggie,” Freeman said. “When we connected with Jimmy Kight, he zoned right in on what we wanted to do. CVM has a psychologist for students and staff, and Mississippi is progressing. We decided to focus on caring for the people who work with patients who can’t take care of themselves.”

Through an endowed gift, Freeman and Bishop established the Maggie Freeman-Bishop Office for Health and Wellness.

“We wanted a place where people can decompress, take a moment if they’ve hit their max for the day, reconnect, ground themselves, or have the emotions they need to have,” Bishop said. “They can have privacy to have those emotions or if they need to pull someone aside and share. We want to train the next generation of veterinary professionals how to cope because it’s not going to get easier with the complications patients face.”

Since Maggie’s death, Freeman and Bishop have adopted two rescue pugs: 12-year-old Manfred and 3-year-old Sophia, who is described as a spicy, bossy, crazy pup.

“We’re convinced Maggie sent her,” Freeman said. “She’s a million times more crazy and stubborn than Maggie ever was!”

Through their gift, they are bringing awareness to the issue of mental health and the toll on the veterinarian community, as well as creating a legacy for Maggie.

“Yes, she was a dog, but anyone who met her realized she was just a force,” Bishop concluded. “A clown and a goofball, but if she met anyone unwell, she sensed it was time to be calm and snuggle. We wanted her spirit to spark something that will help the people who care for animals.”

BY KERI COLLINS LEWIS

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For more information on giving in support of Mississippi State University, visit the MSU Foundation website.

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Dr. Brady Self's family participates in a geocaching activity. See the article on page 20. (Photo by Michaela Parker)

