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Tess, a black Labrador retriever, is doing what she loves following treatment at MSU’s College of Veterinary Medicine’s Intensive Care Unit for a near-fatal wound. The story is on page 8. (Photo by Marco Nicovich)

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Mississippi, like every other state, is feeling the effects of the economic issues facing the nation, and Mississippi State University, like all of Mississippi's other state-supported institutions of higher learning, is operating on a reduced budget for the rest of the current fiscal year.

Educational resources are always important, but they take on increased significances during economic slowdowns.

As a land-grant institution, Mississippi State University was founded specifically to support two major economic sectors—agriculture and engineering. Research that leads to new products, management systems and processes for food and fiber production continues to be an important mission of the Division of Agriculture, Forestry and Veterinary Medicine at MSU. Educational outreach programs and research in support of industries that turn agricultural produce into consumer items are also missions of the division.

Spring 2009 enrollment of students in all three of the division's academic units, the College of Agriculture and Life Sciences, the College of Forest Resources and the College of Veterinary Medicine, was up from the previous spring semester. As a result, there is a strong emphasis on providing state-of-the-art classrooms and maintaining other support to academic programs in the division.

In short, every effort is being made to manage the division's resources in ways that maintain the quality of our academic units and the research and outreach work of the Mississippi Agricultural and Forestry Experiment Station and the Mississippi State University Extension Service.

We will continue to use available state funding to provide basic programs and to seek federal and private support to provide additional services, especially those that help all Mississippians better manage their resources.

Melissa J. Mixon
The flood of low-priced products from foreign competitors, the downturn in the U.S. economy and the tightening of credit availability for consumers are just a few factors causing decreases in domestic furniture sales, especially in the upholstered household furniture category.

“Furniture manufacturers throughout the state are struggling,” said Bill Martin, director of Mississippi State University’s Franklin Furniture Institute. “Now is the perfect time for them to develop export opportunities.”

A recent report by the U.S. Department of Commerce concurred, stating that the biggest long-term challenge facing the furniture industry is increasing imports.

“Furniture products made in the U.S. have a high prestige factor in many other countries,” Martin said. “Domestic furniture products have an opportunity to increase revenues and expand their share of the world market.”

To help expand the state’s market, the furniture institute has partnered with the U.S. Department of Commerce’s Mississippi Export Assistance Center and the Mississippi Development Authority’s International Trade Office to form the Export Resource Service. This collaborative effort was formed to serve as a central distribution point for furniture-related export opportunities, information, data, resources and statistics.

“In 2007, domestic furniture and related products totaling $3.9 billion were exported primarily to Canada, Mexico, the United Kingdom, Japan and China, respectively,” Martin said. “Mississippi’s share of the market was only 3 percent.”

While Mississippi is a national leader in the production of upholstered furniture, the state ranks 11th in exporting furniture.

In comparison, the furniture and related products imported to the U.S. in 2007 totaled $27.6 billion, with China accounting for more than 54 percent of this total and 26 percent coming from Canada, Mexico, Vietnam and Italy.

“Clearly, this is an area in which we can improve and must improve for the long-term growth and survival of furniture companies in the state,” said Glenn Fererri, an international trade specialist with the Mississippi Export Assistance Center.

The Export Resource Service was established to increase Mississippi exports and provide a clearinghouse for trade opportunities between potential foreign customers and domestic manufacturers. The service is designed to save state manufacturers valuable time by helping to identify leads targeted at the furniture-related industry throughout the world. In addition, the organization will help Mississippi exporters obtain necessary information required to sell in overseas markets.

“It is difficult for our manufacturers to compete with foreign competitors who pay low wages, such as China and Vietnam,” Fererri said. “These companies pay workers 98 cents an hour versus the average of over $18 per hour for U.S. furniture production workers.”

However, given the prestige of U.S.-made products, the domestic furniture industry can compete with these competitors in quality and design, he added.

The furniture manufacturing industry contributes $5.7 billion in total industry output to the state and ranks second in manufacturing employment with approximately 175 companies and 24,000 employees.

“We can help grow this contribution through information, assistance and expertise, including individualized counseling services and training,” Ferrari said.

Whether providing market assessment or solving logistical issues, the Export Resource Service creates a win-win scenario for the state’s furniture manufacturers to increase their share of the world market, Ferrari added.

For information on the Export Resource Service, contact Martin at (662) 325-6787 or director@ffi.msstate.edu. The Export Resource Service can also be found online at www.ffi.msstate.edu/export.
Aussie Feels at Home with New Life in Mississippi

By Patti Drapala

When Australia native Fiona McCarthy arrived 3 years ago to begin work at Mississippi State University as a biocuration specialist for the College of Veterinary Medicine, she felt an innate connection with home.

McCarthy grew up in Queensland, a state located near the equator in the northwest corner of Australia. The area is known for its hot climate, rural lifestyle and reverence for sports. Aussies refer to it as part of the Deep South.

“Queensland has many similarities with Mississippi,” she said. “If you’re from Queensland, you are thought of by Australians as being ‘from the country,’ and the same may hold true for Mississippians who go to other parts of the United States.”

McCarthy and her four brothers were children of parents who owned a cattle and sheep ranch near Hughenden, a small town about 890 miles northwest of Queensland’s capital city of Brisbane. Those agricultural roots set her on a career path that eventually brought her to CVM as an assistant research professor in the Department of Basic Sciences.

As a young child, McCarthy entertained thoughts of becoming a teacher or nurse, but a background in agriculture and an affinity for science pulled her in another direction. She earned bachelor’s and master’s degrees from the University of Queensland in Brisbane.

While in school, she worked on agricultural research projects for the Molecular Animal Genetics Centre at the Commonwealth Scientific and Industrial Research Organization, which is Australia’s equivalent to the U.S. Department of Agriculture. While working on her doctorate, McCarthy collaborated on research conducted by the university’s Institute for Molecular Biosciences and the Queensland Agriculture Biotechnology Centre.

In 2003, McCarthy was faced with a decision to go abroad for postdoctoral study, which is a common goal for many Australians seeking to advance in a chosen scientific field.

“Australians view the choice to work overseas as positive and necessary because that opportunity hopefully will set up future collaborations between Australia and other countries that help solve common problems,” she said.

McCarthy applied for research positions at the University of Iowa and at MSU. The one at MSU offered an opportunity to engage in biocuration, an emerging and developing field of science.

Biocuration is a process in which a practitioner works with biological information generated by other researchers to organize, represent and make the data accessible to humans and computers. Scientists who study genetic sequencing of DNA generate a tremendous amount of data, but such information requires a contextual framework to mean something.

“To understand the situation that researchers face, picture yourself with a long shopping list and being presented with thousands of pieces of merchandise,” she said. “How do you begin to find what you want, and then how do you make sense of what you find?”

As part of her job responsibilities, McCarthy often collaborates with CVM genomics professors Mark Lawrence, who is mapping the DNA of bacteria that may cause bovine respiratory disease in cattle, and Shane Burgess, who works on mapping the DNA of chickens to understand how pathogens cause disease in poultry.

“Dr. McCarthy has had an enormous impact on our ability to do competitive research in genomic biology,” Burgess said. “Not only is she an expert molecular virologist, but she also is an internationally respected bioinformaticist, which is a unique combination that few scientists in the world have.”

Lawrence said McCarthy’s expertise has contributed to the credibility of the College of Veterinary Medicine in submitting successful grant proposals for genomics research.

“Dr. McCarthy’s work in developing and releasing annotation tools has been invaluable for analysis of our gene and protein expression experiments,” he said. “We are fortunate to have a biocuration scientist of her caliber.”

McCarthy’s primary work area is a small room with laptop computers, where she and three graduate assistants sift through biological databases and professional research papers. If she has to travel, she can take her laptop laboratory with her.

When she has free time, McCarthy said she enjoys being a surrogate pet owner for vacationing friends. Even more satisfying for her is finding a good game of cricket, a sport in Australia that creates the same obsessive following as football does in Mississippi.

“I was so happy to discover that MSU has a cricket team,” she said. “I figured if the university had a cricket team, then life here wouldn’t be all that bad.”
Young people learn Mississippi history through textbooks, but visiting the 4-H Learning Center and Pete Frierson Museum in Jackson can give them a unique opportunity to experience the past through the eyes of their ancestors.

More than 30,000 youths have toured the learning center since it opened in December 2007 at the Mississippi Agriculture and Forestry Museum complex on Lakeland Drive. Some visitors were veterans, while others were only vaguely aware of 4-H and the opportunities it affords youths. These visits stirred the curiosity of many young people, and as a result, 4-H has gained new members.

“The center is a wonderful teaching tool for us and is symbolic of the partnership between the 4-H program and the people of Mississippi,” said 4-H state program leader Susan Holder. “It demonstrates that we can be connected to our past and celebrate our heritage by learning about events that shaped Mississippi and our country.”
4-H had its beginnings in Mississippi in the 1900s. The Frierson 4-H museum at the learning center features exhibits that highlight each decade of 4-H in the state.

“Many donors worked together to fund the learning center, but it was the commitment of the late Pete Frierson that allowed us to get started,” said Morris Houston, 4-H youth development leader. “We are grateful that he showed leadership and was willing to do whatever it took to establish a facility reflective of 4-H and its involvement in educating and preparing our youth to be leaders for the future.”

The center reflects the historical theme of the agricultural complex envisioned by the Mississippi Department of Agriculture and Commerce.

“As the present becomes the past, and the future the present, the learning center will incorporate new events and learning technologies into its presentation of the historical impact of 4-H in Mississippi,” Holder said.

The center uses distance and interactive learning to reach modern youngsters accustomed to communication through the Internet, cell phones and audiovisual technologies. It has a computer laboratory that allows youths to connect with 4-H events as they happen.

“People leave the museum with an awareness of what 4-H is and how they can be a part of the 4-H program,” said 4-H intern Terence Norwood, a secondary education major at Mississippi State University.

“They learn that 4-H is about not only caring for farm animals or raising crops, but also about exploring robotics, photography, art, food management and clothing design. The first question many children would ask me after visiting the center or participating in an exercise was how they could get involved.”

Not all tried-and-true methods of learning have been abandoned for more advanced technologies. Some of the more popular events at the center have included a frontier day and a 3-day summer camp for children under 12. During frontier day, the children prepared a meal over an outdoor fire in an open pot just as their ancestors might have done in decades past.

“We started building a fire at 8 a.m., and it took all morning to get everything prepared and the meal cooked,” said Deborah Knight, a longtime 4-H youth agent who served as the Frierson museum curator during its first year. “The children gained an appreciation for what Mississippi families had to do to put food on their table.”

The children also participated in a hands-on simulation of milking a cow, another chore of olden days. In this exercise, the cows — and more importantly, their udders — were made of plywood. Many grandparents and great-grandparents have related stories of getting up before dawn to perform this chore, only to be kicked by a cow that did not want to be milked.

“The children got really involved with the milking activity,” Knight said. “Most of them relate getting milk with going to the grocery store, and it was important for them to see where food actually comes from.”

Today’s youths can learn about their own potential by touring the center and getting involved in 4-H, Holder said.

“We hope youth will develop a sense of history and appreciation for the 4-H movement in Mississippi by visiting the learning center,” she said.
A bullet to the brain usually means game over, but one young Labrador retriever beat the odds with the expert emergency help of a local veterinarian and Mississippi State University’s College of Veterinary Medicine.

Tess is an 18-month-old female black lab who was accidentally shot in the head with a shotgun while duck hunting early one Sunday morning in December. She was in a near comatose state by the time her owner, Steve Horn of Madison, got her to the CVM emergency room 4 to 5 hours later.

“As soon as she was shot, she began swimming to me. I waded out to get her and scooped her up, and we put her in a boat,” Horn said. “She got really cold and went into a deep shock, and we didn’t know if we would lose her or not.”

Horn performed CPR on Tess and noted her rapid breathing but strong heartbeat. He had removed her protective vest to see her injuries, and he wrapped her in his heavy hunting coat to try to warm her as her body temperature dropped. Once back to his vehicle, he took Tess to Dr. Royann Leflore, a 2006 graduate of CVM, who provided emergency after-hours care at the Greenwood Animal Hospital.

The staff in Greenwood warmed her, put her on steroids and antibiotics, and stabilized her with intravenous drips for the emergency truck ride to MSU.

“She was in bad shape, to say the least,” Horn said.

Dr. Christine Bryan, also a 2006 CVM graduate, was the primary veterinarian who managed the case and Tess’ care. When she arrived, Tess was stretched out, weak in all four limbs, and had a rapid heart rate and breathing. Her head was swelling, and her neck was extended unnaturally. Her eyes did not respond correctly.

“At the time of her arrival and assessment, I gave Tess a grave prognosis for survival and an even worse prognosis for a seminormal life as a pet,” Bryan said. “I told the owners that if she survived, I felt that she would
never be able to hunt again, but hopefully she would be able to be a house pet.”

Staff gave Tess medication to reduce brain swelling, sedate her and prevent seizures. They placed her on oxygen and gave intravenous fluids to maintain her blood pressure and keep her hydrated. She received pain medication and was radiographed.

“The skull radiographs revealed approximately 26 pellets around the skull,” Bryan said.

On the second day, Tess was more alert and responsive when her name was called. However, she was still unable to see with her left eye. A CT scan of her head showed a shotgun pellet in the dead center of her brain.

“The CT scan revealed that one pellet had penetrated her skull at about the middle left lateral aspect of her brain and was situated between the two hemispheres,” Bryan said. “If the pellet had not followed its exact trajectory, it could have caused more extensive brain damage, lacerated a blood vessel, penetrated both brain hemispheres or caused uncontrollable hemorrhage in the brain.”

The staff continued to give Tess medications to prevent seizures, to reduce brain swelling and to keep her sedated. Antibiotic ointment was applied to both eyes to treat an ulcer on her left eye and to protect her right eye. That night she began eating a little bit.

By day three, Tess could curl into a typical resting dog pose, but she could neither sit nor stand. Staff continued her medications, intravenous fluids and oxygen, and Tess continued to eat soft food and began drinking water.

On day four, she pulled herself to a sitting position and an hour later began walking, although she was unsteady and her head tilted to the right. Doctors removed Tess’ oxygen and took her off the seizure and brain swelling medications. She began oral antibiotics and continued to receive pain medication and antibiotic ointments in her eyes.

By the fifth day, Tess was walking with only a slight head tilt and could eat, drink and relieve herself normally. She was released to her owners on the sixth day with medications and specific instructions on how to continue her therapy and rehabilitation at home.

“She had improved so much in those 6 days that we determined she would be able to have a great quality of life,” Bryan said. “She still had some neurologic deficiencies, and was unsteady when she walked and did not appear confident when stepping up or down.”

When she left, Tess’ prognosis was that she would be able to function well as a pet and possibly could run, swim and hunt again one day.

“For the first 2 weeks, she was unstable on the wood floors at home and didn’t want to go up steps, but she’s totally normal now,” her owner said in February. “She is hunting again as good as ever and doesn’t appear to know what happened to her.”

Horn said he was not surprised at Tess’ recovery because of the care she received from both the Greenwood veterinarian and MSU’s veterinary college, and because many people prayed for her throughout the experience.

“Mississippi State’s vet school was absolutely incredible, and she had a lot of prayers and is 100 percent recovered,” Horn said. “Her care wasn’t just good; it was superb.”

Bryan, Tess’ MSU veterinarian, said Tess would not have survived without the care she received in Greenwood and at MSU. She looked great at her 3-week checkup in early January.

“She had a slight head tilt and mild incoordination, but she was getting around well. She was bright and alert and wagging her tail and was very excited to get her duck decoy to carry around the hospital with her,” Bryan said.

Dr. Andrew Mackin, Dr. Hugh G. Ward Endowed Chair of Small Animal Veterinary Medicine and service chief of CVM’s Small Animal Internal Medicine Department, said Tess benefitted from the veterinary college’s emergency service and the specialized care she received during her recovery. At CVM, Tess received round-the-clock care and supervision, and had the advantage of expertise and state-of-the-art equipment.

“The MSU College of Veterinary Medicine’s Joe Ann Ward Internal Medicine Critical Care Unit is one of the few 24-hour care and emergency veterinary facilities in Mississippi, and the only facility offering tertiary-level (specialized) care of referred small animal patients,” Mackin said.

Owner Horn learned one lesson from the ordeal.

“Everyone should have an emergency plan when they go out hunting. I had no idea what to do when the accident happened,” he said. “Everybody should know where the nearest veterinarian is located and have an emergency phone number for the clinic. They also should have an emergency plan and know how to contact the vet school.”
Farmers and Butterflies Benefit from Agricultural Buffers

By Karen Brasher

Floating across the air effortlessly, butterflies flutter from flower to flower, providing scientists with a glimpse of an ecosystem’s health. Butterflies and many other invertebrate species can help gauge environmental conditions.

Butterflies also pollinate plants — much like honeybees do — which is vital as one-third of the food produced for human consumption is dependent on native pollinators. In addition to these benefits, the insect serves as a food source for birds and other wildlife.

It appears that increasing butterfly habitat would be beneficial to food production, the ecosystem and the species. To determine how farmers can play a role in improving the environment, scientists in Mississippi State University’s Forest and Wildlife Research Center are looking to conservation buffers for answers.

“Upland habitat buffers are strips of native grasses and wildflowers planted along agricultural field margins,” said wildlife and fisheries assistant professor Sam Riffell. “These strips are widely planted, often to protect waterways from erosion or agrichemicals.”

Farmers receive financial assistance to create buffers through a number of USDA conservation programs.

Riffell and colleague Wes Burger, a wildlife and fisheries professor, initiated a study to understand habitat requirements for butterflies, measure their abundance and determine the species diversity in agricultural field borders planted in conservation buffers. The research also determined the effects of conservation buffers on birds and invertebrates.

To perform the study, wildlife and fisheries graduate student Jolie Goldenetz conducted butterfly counts on agricultural lands in north Mississippi during the summers of 2005 through 2008. Goldenetz found 45 different species of butterflies in the conservation buffers surrounding the cropland.

Scientists have discovered that butterflies do a lot more than just pollinate plants.

“Findings suggest that buffers benefit bird and butterfly communities while also reducing erosion, pesticide drift and native plant loss,” Riffell said.

This information is significant. Typically, the lack of suitable habitat in large agricultural landscapes causes butterfly species to struggle for survival, Riffell added.

Funded by the Natural Resources Conservation Service Agricultural Wildlife Conservation Center, the research found that buffers provide the necessary habitat for butterflies to complete their life cycles. Thus, the butterflies are able to provide ecosystem services within the agricultural landscape.

“The large number of species is likely related to the increased plant diversity found in the buffers,” Burger said. “The native grasses and wildflowers planted in the buffers are the same species found naturally at Mississippi and Alabama Blackbelt Prairie sites.”

Butterflies are attracted to these plants more than to agricultural crops.

“Habitat specialists also increased from four to 13 species during the 4-year survey. Habitat specialists are species that depend on specific plants for survival and reproduction,” Riffell added.

Work on the project is not yet complete. Scientists are still investigating the importance of butterflies to the ecosystem and the linkages between butterflies and other wildlife and plant species. When the project is complete, scientists will make recommendations on how farmers and ranchers can best manage agricultural lands to enhance wildlife benefits and earn additional income.

“The results are timely,” Burger said. “Honeybee hives throughout the United States are disappearing through Colony Collapse Disorder. Conservation buffers provide a solution for increasing native pollinators and improving habitat, while providing financial benefits to farmers.”
Ethanol serves as an alternative to conventional fossil fuels, and researchers are finding ways the poultry industry can benefit from its production. Demand for biofuels is due in large part to volatile fossil fuel prices. American businesses are embracing the shift toward renewable energy, and government mandates are making it more profitable for corn producers to sell their crops for ethanol production than for animal feed.

Ethanol is developed by fermenting starches from corn and other grains. The resulting ethanol becomes fuel, and a byproduct known as distillers dried grains with solubles (DDGS) is left behind. Rather than let DDGS go to waste, the livestock and poultry industries are starting to use this nutrient-rich byproduct.

Alex Corzo, an assistant poultry science research professor at Mississippi State University, and his colleagues are researching ways the poultry industry can best use DDGS. They are evaluating it as a commercial ingredient in poultry diets.

“We are testing how much DDGS can be incorporated into poultry diets without affecting the quality of meat and eggs,” he said. “It is not as simple as just adding DDGS to feed. We need to ensure we have the right balance of all relevant nutrients to maximize any possible benefits.”

Corzo has been evaluating the differences between poultry on conventional diets and poultry on feed containing DDGS.

“We have studied live production and carcass traits, as well as color, texture and flavor of broiler meat,” Corzo said.

In collaboration with MSU’s Department of Food Science, Nutrition and Health Promotion, the researchers used taste tests to evaluate the broiler meat from the different treatment groups. Participants tasted meat from the two treatment groups and recorded scores for each. The initial testing showed there were no significant differences in broilers on the different diets.

“Both treatments produce high-quality breast and thigh meat with minimal differences,” Corzo said. “There was a slight preference from consumers for the broilers fed traditional diets, but both products were well liked overall and received high scores from participants.”

Layer hens also were put to the test. Corzo and his colleagues fed hens one of five treatment diets containing increasing amounts of DDGS and then evaluated factors such as egg production and quality.

“There were no negative impacts on production of commercial layers with levels of up to 32 percent of DDGS in the diet,” Corzo said. “The layers had superior egg production with 16 percent DDGS incorporated into the feeding regimen. We also observed some benefits in regard to flavor and product acceptability with eggs from hens with DDGS in their diets.”

DDGS contains a significant amount of digestible energy and many nutrients, including fiber. Although fiber is an important component of most diets, it is not easily digested by poultry. An excess of fiber in poultry diets can cause the digested food to move too quickly through the gastrointestinal tract, not allowing enough time for the nutrients to be absorbed. As a result, the tract becomes more vulnerable to bacterial growth that can cause certain diseases.

“Bacteria proliferation can cause significant problems in a poultry house,” Corzo said. “To alleviate this problem, we are researching ways in which some fiber can be removed from DDGS.”

The research is still new, but Corzo and researchers in MSU’s Department of Agricultural and Biological Engineering have seen improvements when broilers are fed DDGS diets with some fiber removed.

“Our goal is to find techniques that work and are easy for growers and feed companies to replicate,” Corzo said.

Mike Kidd, head of poultry science at MSU, said the industry is using DDGS and depends on Corzo’s research to guide them.

“As corn prices rise, DDGS becomes a good alternative. We want to stay ahead of the curve in researching how this alternative can best suit the needs of the industry and consumers for years to come,” he said.

Corzo stays informed of the changing needs of the industry through open communication with growers and industry nutritionists.

“We learn from them, just as they learn from us. Getting firsthand accounts of DDGS-based diets aids us in our research, and we can share information with the industry on how to get the most nutritionally balanced feed at the cheapest cost,” he said.
When he graduated in 1984, Jerome Goddard left his mark on Mississippi State University. Now, he is back to reclaim it.

Goddard, a Booneville native who earned a doctorate in medical entomology at MSU, inscribed “Jerome Goddard was here in 1984” on the inside edge of a laboratory door in the Clay Lyle Entomology Building. After an illustrious career as a medical entomologist with the United States Air Force and the Mississippi Department of Health, Goddard accepted a position with MSU last October as associate professor of medical and veterinary entomology.

While Goddard finished unpacking, stacking and sorting through books and files in his new office, a colleague reminded him of the inscription. He headed down the hall to examine that door.

“The tiny, tiny inscription I wrote was still there,” Goddard said. “That immediately let me know I have come full circle to a place that I have always loved.”

Since his childhood, Goddard has been comfortable crawling around with living creatures such as mosquitoes, spiders and ticks that many people find unnerving. While many of these species are relatively harmless, a few carry organisms that can cause disease in humans and animals. If populations of disease-carrying vectors increase too rapidly over a large area, they can overwhelm the ability of local communities to protect the public health.

This scenario fascinated Goddard and motivated him to pursue a career in public health entomology. He earned a bachelor’s degree (1979) and a master’s degree (1981) in biological sciences from the University of Mississippi before his 3-year sojourn at MSU.

One of Goddard’s major professors was Dr. Bev Norment, an MSU entomologist conducting research on ticks carrying the bacteria that cause Rocky Mountain spotted fever. The pathogen’s primary vectors are the American dog tick in the eastern U.S. and the Rocky Mountain wood tick in the West. It takes a special individual to be willing to work with ticks, and Goddard was indeed that type of person, according to Norment.

“Jerome was a diligent, responsible, hard worker,” Norment said. “I could always depend on him to follow through on his research and writing commitments, and he enjoyed what he was doing. That’s why he was one of the better graduate students I had at Mississippi State.”

Influenced by Norment’s enthusiasm, Goddard developed an interest in the ecology and epidemiology of tick-borne diseases, a specialty that ultimately enhanced his opportunities to pursue public health entomology. After graduation, he enlisted in the Air Force to gain a global perspective in dealing with public health issues. He arrived at Brooks Air Force Base in Texas in 1986 to begin work as a medical entomologist with the Epidemiology Division of the USAF School of Aerospace Medicine.

Because military personnel are stationed throughout the world, many of them encounter exotic pests and pathogens, exposing themselves to diseases eradicated in the U.S. This situation highlights the need for medical entomolo-
gists in the military to minimize health risks to troops and auxiliary civilian personnel overseas.

“In wars, more casualties come from vector-borne illness than they do from bullets,” Goddard said. “My military experience was invaluable because it broadened my training and perspective about vector-borne illnesses. Medical entomologists who work in the military have to be familiar with almost all of the bugs in the world that can affect human and animal health, not just the local pests in a particular area.”

Such knowledge allows the entomologist to design a scheme for vector control that will not make a problem worse or create additional problems. There are about 150 professional military entomologists in the U.S. Armed Forces trained to address entomological situations arising in the tropics, the desert, the tundra, the polar ice caps and every other type of climate and terrain. While Goddard enjoyed his Air Force tour of duty, he wanted to advance in a new direction once his commitment ended. In 1989, the Mississippi Department of Health had an opening for a public health entomologist. Goddard applied for the position and accepted it even though the scope of the job was not definitive.

“I told my bosses that medical entomology was like a parachute,” he said. “You may not often need it, but when you do, you really need it. I assured them I would take care of everything, and it was a wonderful experience during the 20 years I worked there.”

Goddard had the freedom to build his own program in public health entomology. His idea of an effective public health program incorporated three components that can weigh heavily in the program’s acceptance and success: people, disease and psychology. With these components in mind, Goddard translated technical data into useful information to educate the public, provide medical knowledge and encourage further research. His appointments as clinical assistant professor of preventive medicine and assistant professor of medicine at the University of Mississippi School of Medicine also helped with this endeavor.

“I had a laboratory in which to identify and examine various creatures,” he said. “For many years, it was just me. Later, the department was able to hire additional professionals to support and expand our public health entomology program.”

Ticks and mosquitoes demand the most attention of the medical community in addressing vector control and public safety in local communities. The occurrence of disasters, natural or man-made, often complicates these issues. When Hurricane Katrina ravaged the Gulf Coast in 2005, government officials huddled to devise a vector abatement plan. Goddard was right in the middle of it.

“Vector control isn’t an issue until about 2 weeks after the hurricane has hit,” he said. “Hurricanes can destroy, disrupt and blow mosquitoes out of their habitat temporarily, but these determined biting critters come back with a vengeance.”

After a hurricane, buildings lie in shambles, water sits around and debris piles up. These conditions are ideal for mosquitoes, flies and other vermin to breed. Disaster victims, responders and triage personnel are out in the open with these pests.

“You’re back to primitive times with a disaster occurring over such a wide area,” Goddard said. “The basic issues of pest control, clean water, sewage, communication and power sources that we take for granted come into play. Controlling the spread of disease becomes extremely important.”

Goddard assisted the Federal Emergency Management Agency in implementing aerial spraying over Hancock, Harrison and Jackson counties to control the burgeoning mosquito population. Team members did their homework as they mapped areas with particularly heavy infestations.

“The aerial spraying reduced mosquito numbers by 95 percent in one night,” he said. “We discovered that treating a wide area by aerial spraying can be an effective way to quickly knock down a vector problem.”

As an entomologist with the state health department, Goddard designed vector control programs administered within a regulatory setting. Now that he has returned to MSU, Goddard will focus on education, training and outreach in his role as a medical and veterinary entomology specialist with the MSU Extension Service.

“I am excited about the change in my career,” he said. “I will be able to work with area Extension personnel with public health responsibilities and perhaps reach students who are interested in pursuing medical or veterinary entomology as a career.”

Goddard said he hopes to teach a medical entomology class, reach the public with articles and brochures and conduct research on medical and veterinary pests. He already has written six books, including two novels and more than 160 scientific articles. His landmark textbook, “The Physician’s Guide to Arthropods of Medical Importance,” won an award from the British Medical Association in 2003 and is in its fifth edition. Goddard’s most recent textbook, “Infectious Disease in Arthropods, Second Edition” has just been released.

“Working with municipalities to improve mosquito control is an example of the outreach I intend to do as an Extension specialist,” Goddard said. “Good control is more than just driving the spray trucks up and down the street. Pest control and its public health implications can be more effective and efficient if communities work together with the experts in implementing pest management programs.”

Goddard now has an opportunity to make a second mark at MSU.
For more than 130 years, each of Mississippi State’s presidents has been uniquely qualified to serve the university, and no. 19 is no exception.

Mark Keenum’s association with MSU began when he was a newborn living in student housing on campus with his parents. During the next 47 years, he earned three degrees at MSU, taught students in the classroom on the Starkville campus and helped deliver university research results and Extension Service programs to farmers throughout Mississippi. He also served on the staff of U.S. Sen. Thad Cochran for 17 years and as an undersecretary of the U.S. Department of Agriculture for 2 years before being named MSU’s 19th president in November 2008.

“Starting my career as an assistant Extension marketing specialist at MSU was an outstanding opportunity for me,” Keenum said. “Working with Extension agents involved with aquaculture, forestry,
natural resources and specialty crops was a great training ground. It also allowed me to meet many of our agricultural leaders and to learn to work with diverse constituencies.”

After 2 years with the MSU Extension Service, he accepted a position as a research associate with the Mississippi Agricultural and Forestry Experiment Station on campus.

All of those experiences, combined with Keenum’s dedication and enthusiasm, caught the attention of Sen. Cochran, and in 1989 the young economist left MSU for the opportunity to serve as a legislative assistant to the senator.

“I was very blessed to be part of a land-grant university and to have worked in all three major components of MSU’s mission — teaching, research and service,” he said. “To have done all three was a tremendous asset to me when working with Sen. Cochran in the Senate Committee on Agriculture, Nutrition and Forestry.”

As Sen. Cochran’s advisor on agricultural affairs, Keenum worked on policy and programs that helped shape the future of the nation’s agriculture, including the 1990, 1996 and 2002 Farm Bills.

“Mark has many outstanding qualities that make him an excellent choice to serve as president of MSU,” Sen. Cochran said. “He is a very good listener and cares deeply about those who work with him and for him. He served with great distinction as my chief of staff and legislative assistant. His tenure at the Department of Agriculture added to his depth of understanding of world agriculture issues. All of this gives Mark superstar status in my book.”

From 1996 through 2006, Keenum served as Sen. Cochran’s chief of staff, a role that helped set the stage for the rest of his career.

“The responsibility of managing a large Senate staff and overseeing committees, including the Senate Appropriations Committee, included interacting with state and national leaders, as well as congressional leaders and getting to know those individuals on a personal basis,” he said. “That experience was invaluable in preparing for my role as undersecretary of agriculture.”

At USDA, Keenum provided leadership and oversight for the Farm Service Agency, the Risk Management Agency and the Foreign Agriculture Service. Those agencies have more than 16,000 employees in more than 2,300 offices in this country and 100 offices around the world.

“Dealing with domestic agricultural policy and representing our country in international trade negotiations was a great honor for me,” he said. “I learned a great deal about effective management of large organizations, as well as understanding broad policy and developing the ability to juggle many issues at one time.”

Those are qualities that have served the MSU president well during his first months on the job. He has been meeting with MSU students, faculty and staff, as well as traveling the state talking with alumni, state legislators, business leaders and others as he prepares plans for the university’s future.

“The biggest challenge we are facing is the shortfall in state revenues,” Keenum said. “There has been a 5 percent reduction in funds provided by the state for the current fiscal year, and we are expecting a reduction in our overall funding level for the 2010 fiscal year. Because of that outlook, we are looking at things we can do to insure that the budget reductions have minimal effects on our faculty, staff and students.”
Home gardeners need useful tips on vegetable gardens and home landscapes, but most scientific publications are full of technical jargon and unfamiliar terms, leaving many readers unsure how the information relates to them.

The solution? Mississippi State University’s Research and Extension Centers work together to develop a targeted outreach plan to assist home gardeners.

Agricultural science and research are evolving rapidly and keeping up-to-date can be a daunting task. MSU’s Research and Extension Centers are located in the four sections of the state coinciding with key agricultural commodities. The aim of each center is to take the latest agricultural research and put it in the hands of those who need it most.

Research and Extension Centers provide solutions to Mississippian’s problems on a daily basis. For the home gardeners, the resolution is to develop short topic videos that translate technical information into everyday language. Gary Bachman of the Coastal Research and Extension Center and Lelia Kelly of the North Mississippi Research and Extension Center are coordinating efforts to produce the vignettes and post them on www.msucares.com, making them available 24 hours a day, 7 days a week. The videos will provide practical information in easy-to-understand demonstrations on everything from pruning crape myrtles to caring for interior plants.

Delivering usable research findings to communities takes on many forms. Community members, producers, growers and farmers have varying needs. Personnel at the R&E Centers must be flexible and creative when it comes to communicating with their clientele. What works with one producer or grower group may not work for another, and understanding those differences is just as important for the centers as keeping up with the latest science.

Joe Street, associate director for MSU’s Extension Service, said R&E Centers serve as the first point of collaboration between researchers and extension personnel.

“Extension specialists bring the community needs to the researchers and in turn, researchers communicate solutions and strategies for the specialists to bring back to the community,” he said. “It is a two-way street, and keeping the lines of communication open at the front end helps us develop the strategies needed to address the issues of our clientele.”

Building partnerships within the agricultural community is a key component of the centers’ success.

“Experts at all of our centers understand the value of partnering with the industry groups, community organizations and the media,” Street said. “They serve as effective avenues of communication.”

Partnerships and networking serve as the first pieces in the communication puzzle. Each center tailors its communication strategies to best serve its clients’ needs.

The following pages illustrate how the research and extension arms at each center work together to provide research-based knowledge and education and disseminate it in ways that benefit their communities.

Δelta Research and Extension Center

On an expansive 1,650 acres, the Delta Research and Extension Center focuses its research on cotton, rice, soybean, corn and catfish production. The center addresses both the short- and long-term concerns of Delta farmers. It has been an integral part of the region for many years, and more than 12,000 people visit the research complex in Stoneville each year.

Director Steve Martin said the extension personnel keep close relationships with producers, growers and farmers.

“They stay apprised of the issues in the area,” he said. “And spend significant amounts of time building relationships with producer groups, and have developed innovative ways of keeping in contact with them.”

The Delta R&E Center takes a modern approach to sharing research with the community with its long-distance learning
classroom. It is located at the Stoneville complex and is much like a traditional classroom, but instead of a teacher and chalkboard, there is a large modern videoconference screen and microphones at each seat. Martin said the virtual classroom helps area farmers access information in other parts of the state.

“For instance, if a researcher in northern part of the state is holding a meeting on soybean issues, our extension specialists invite area soybean farmers to the classroom,” he explained. “We provide them with the means of accessing information from outside of the area without having to travel.”

Martin said he has seen firsthand how local farmers and producers use the long-distance learning capabilities of the classroom.

“They have become really comfortable with the technology and like the ability to ask questions and interact directly with the researchers and experts,” he said.

The center also brings research into the homes of its clientele through the local news. Rebekah Ray, operations coordinator at the center, was specifically hired to help publicize the latest research. She is working directly with area reporters to get the center’s activities and services in the news. When researchers need to share information and results of their work with the community, they turn to Ray to get it to the media.

Ray collaborates with researchers and Extension personnel on getting articles printed in Delta Farm Press, Cotton Grower and Delta Business Journal. The publications are delivered to the homes of everyone in the Delta’s agricultural community and serve as a resource for keeping apprised of current agricultural news.

“We have a good relationship with the local news station, and our scientists are interviewed on a regular basis,” Ray said. “Putting a face with the research helps the community become more familiar with us and makes them aware of what we can do to help them.

“I also write news releases on topics of interest for area farmers,” she said. “This requires boiling down the scientific information into language that is easily understood and sending it to local media outlets.

“We want the information to be accessible to everyone,” Ray said. “The media has been a good partner in helping us reach our audiences.”

Central Mississippi Research and Extension Center

“Increasing Public Image” is this year’s theme at the Central Mississippi Research and Extension Center in Raymond.

The center’s mission is to develop relevant research and extension programs that serve the needs of the central and southern parts of Mississippi. The research and extension arms collaborate on mechanisms for sharing research with their audience and are focused on becoming an even more visible part of the community.

“We look for ways to better serve our region,” said Dwayne Wheeler, the center’s director. “We’ve worked well with livestock producers, horticulturists, the forestry industry and other groups for many years, but we want to build on those relationships to increase our visibility.”

Wheeler said partnerships with commodity and interest groups are developed through close community ties.

“Our researchers and extension agents are a part of the community,” he said. “They have built a strong rapport with local producers and grow-
ers and are well-respected. Our clientele know we have their best interests at heart.”

Researchers actively keep their finger on the pulse of producer concerns by attending industry group meetings and scientific conferences. These meetings allow for them to share new information and receive immediate feedback from producers.

“Being at commodity group meetings gives us a front-row seat to hearing current concerns and issues and an opportunity to answer questions and share ideas face-to-face,” Wheeler said.

Wheeler maintains that the real key to successful communication is ensuring that researchers and extension personnel are on the same page.

“We take an interdisciplinary approach to research and information dissemination,” he said.

This process starts with extension staff conducting needs assessments in the region. They bring community needs to the scientists so appropriate research can be conducted. Rather than waiting for the findings, extension specialists are involved in the actual research.

“There isn’t any better way to understand the research than being a part of it,” Wheeler said. “extension professionals get hands-on experience with research application so they can better deliver it to the farms, gardens and communities of our region.”

Rankin County Extension Director Houston Therrell subscribes to that theory when working with his clientele.

“My motto is ‘don’t tell me, show me,’” Therrell said. “We give the community hands-on experience with techniques they can use at home or in their businesses.”

Therrell planted raised vegetable beds, conventional-till beds, winter and summer annuals, forage plots for wildlife evaluations, turf plots with a variety of grasses, and a flower garden with herbs, annuals and roses all identified by markers. He and his staff invite clientele to attend on-site demonstrations.

“We equip them with knowledge they can easily put to use,” Therrell said. “Our outreach plan is all about getting folks here, and we have an open door policy. Seeing the different plants and grasses up close gives clientele an idea of what can work for them.”

Wheeler’s communication goals are set high for the coming year. The center is striving to meet its goal of increasing its public image by exploring ways of getting research activities in the news.

“It is about partnership and sharing ideas,” Wheeler said. “We’ve seen the success the Delta Center has had with local media, and we’ll look to them for ideas as we build relationships with reporters in our area.”
Assessing the needs and concerns of all facets of the region keeps the center’s research on track.

“It is a broad-based approach to understanding what our community needs and how we can assist them,” Knight said.

Gary Bachman, assistant extension professor of horticulture at the center, depends on community assessments to develop horticultural outreach to consumers and commercial growers.

“There are many layers to extension and research, and our job is to make sure we work as a team to identify any gaps in those layers, while not duplicating efforts,” he said.

Bachman puts a face with the most current horticultural research by participating in gardening clubs, such as Mississippi Master Gardeners, the Camellia Society and the Day Lilly Society. He increases their knowledge by introducing relevant research developed at MSU.

“My goal is to show them how the research is applicable to them,” Bachman said. “There is a huge need for horticultural outreach — from consumers and commercial growers to home gardeners. We get out there and interact with them as much as possible.”

As the winter frost thaws and gardening fever begins, Bachman attends an average of two gardening meetings a week. But he is creating even more ways of reaching the horticultural community. A nursery grower expressed difficulty in keeping up with information provided in scientific journals. The grower wanted to stay current with the latest horticultural science to benefit his business but was not sure where to start. Bachman responded by developing a quarterly newsletter that translates the most recent scientific information into a more palatable and understandable language.

The center values its relationship with the media. Television producers and newspaper editors depend on the center’s experts as sources for interviews.

“We have a great relationship with the Sun Herald and often provide specialists to be interviewed on the local news and to provide answers during call-in radio segments,” Knight said. “We never stop looking for ways to get our message out there.”
At the North Mississippi Research and Extension Center, the clientele drive the research.

Each year, approximately 300 producers, growers, and industry and university representatives attend a Producer Advisory Council meeting at the Lee County Agri-Center in Verona. The meeting allows producers and growers to talk directly to research scientists and extension professionals about their needs. Everyone from sweetpotato and swine producers to ornamental plant growers and equine groups can voice their research requests for the coming year.

“The advisory meeting is our most effective way of gathering agricultural producers’ and industry concerns and addressing them,” said Bill Herndon, the center’s director. “It opens the lines of communication between research, extension, producers and growers.”

At the meeting, producers and growers are divided into interest groups, each of which develops three to five research and extension program needs. The groups then present their lists to MSU experts.

“Knowing what the real concerns are is how we develop our research and extension priorities,” Herndon said. “We integrate producer issues into our ongoing research and also develop new areas of research and outreach as needed.”

The meeting also provides an opportunity for area producers and growers to glean new research information. Scientists set up posters and exhibits on the most current agricultural research, and producers can interact directly with those who conduct the research.

“The poster sessions give the producers a sense of what scientific research is being developed and how it can help them,” Herndon said. “Our researchers see it as a good opportunity to reach the group they are trying to help.”

Understanding the concerns is just the first step; next extension staff and research scientists collaborate on circling back to the community.

“A very important next step is disseminating the findings to area producers,” Herndon said. “Extension staff works with researchers on developing activities to answer the questions received at the advisory council meeting.”

Extension staff take the research findings and develop producer workshops to communicate how the research can be used to the producers’ benefit. For instance, cotton producers who are looking for more research on conventional cotton varieties for hill production get the research results provided to them in an interactive workshop.

Extension staff and researchers also develop reports and other informational materials to distribute to area producers and growers. Attending producer and industry group meetings is another way researchers and extension personnel get valuable information to their community.

Herndon explained that keeping the agricultural community involved from start to finish is how the center achieves its communication goals.

“The clientele are involved from the very beginning. We know what they are looking for and who the players are,” Herndon said. “Having their involvement from the start makes it easier for us to get information to them on an ongoing basis.”
Volunteers who have earned the title of Master Gardener share a love for gardening and a desire to serve others, but the projects they take on are as varied and unique as the individuals themselves.

Mississippi has more than 750 active Master Gardeners, a group of people who have completed 40 hours of college-level training in horticulture and volunteered a required number of hours.

Lelia Kelly is a consumer horticulture specialist with the Mississippi State University Extension Service and the statewide Master Gardener coordinator. She said the work of these volunteers is almost immeasurable.

“These are people who don’t get into the program unless they have a real spirit of volunteerism where they’re willing to give back to their communities,” Kelly said. “They find out what the horticulture need is in an area and work very efficiently to fill that need. They do so many worthwhile projects in our communities.”

Kelly said volunteers must complete 40 hours of training at a cost of $85 and perform 40 hours of volunteer service the first year to be certified as Master Gardeners. To maintain their status, Master Gardeners must take 12 hours of educational classes and perform at least 20 hours of service annually.

“Master Gardeners serve under the guidance and supervision of the county Extension director or area horticulture agent,” Kelly said. “They have the same charge as Extension Service employees, to deliver good, research-based information to the public to improve their quality of life and, in this case, make them better gardeners.”

Master Gardeners commonly beautify and maintain landscaping in public areas near courthouses, other buildings and downtown boulevards. Others routinely do projects at schools and with students, help with landscape recovery efforts after disasters, and work as volunteers at garden shows and horticulture events.

Silvana Rausa is a long-time Leflore County resident and Master Gardener. A native of Italy, Rausa came to the Delta for the first time in 1966 as the wife of a doctor serving with the U.S. Public Health Service.

“I took the first Master Gardener course they ever offered in Leflore County,” Rausa said. “They did it right, and it was a pleasure to do it.”

Rausa’s interest in horticulture has been life-long. She began living in the Italian countryside with her family when she was 6. The family grew their own vegetables and raised chickens and rabbits. Later, she became the first female graduate of an agriculture school in Italy. When Rausa came to the United States, she and her husband first lived in New York City and then in a 20-story apartment building in Newark, N.J.

When the couple moved to the Delta, Rausa finally had a chance to have a garden of her own. Rausa became a Master Gardener in 1995, but she does much more than work in her garden. Her projects are numerous and include installing and maintaining landscaping at the Leflore County Extension Office, landscaping the Leflore County Courthouse and organizing plant swaps.

“At the end of the day, it’s nice to know you did something and were happy,” Rausa said of her work with the Master Gardeners.

Shirley Estes, a Brookhaven city official and dedicated Master Gardener, shares Rausa’s enthusiasm for the volunteer work.
“I am very interested in gardening and have been active in community appearance for quite a few years,” Estes said. “I saw the Master Gardener program as a wonderful opportunity to do this in an organized and concentrated fashion.”

Estes became a Master Gardener in 2000 and an alderman in 2004. She is on the Chamber of Commerce community appearance group and is a trustee for the Brookhaven Beautiful organization. She often finds these duties intertwined.

“Every time a new project comes up, the mayor asks me, ‘Do you think you can handle that?’,” she said. “Sometimes I’m wearing not just one of those hats but all of them at once.”

Lincoln County projects include landscaping at the hospital, library, fire department and cemetery, as well as tending a rose bed and large planters in downtown Brookhaven. Planned projects include landscaping at the county’s Confederate memorial and the police department’s new location.

“The thing that makes the Master Gardener program successful is that we can network with all these other programs, but the professionalism comes from the training we get and the resources we have through Mississippi State University and the Extension Service,” Estes said.

Jon Ruscoe is the Lafayette County Extension director who oversees an active group of 36 Master Gardeners. The group has not been around long, but they are hard-working.

“You can’t beat them,” Ruscoe said of their dedication.

A few years ago, the group began offering a learning series each spring that was free and open to the public. The series usually runs for about 5 weeks, covering different topics each time.

“People bring a bagged lunch and listen to a Master Gardener talk about gardening topics,” Ruscoe said. “The seminar series covers anything from invasive species to ornaments in the landscape. It has been very successful.”

Lafayette County is not the only county that offers such an opportunity.

Kelly said the Extension Service usually trains between 150 and 200 new volunteers each year, and usually at least half complete their commitment to become certified Master Gardeners. For more information on the program, contact the local county Extension office.
The gopher tortoise lives in deep burrows in well-drained, sandy soil, typical of a natural longleaf pine forest,” said Jeanne Jones, wildlife and fisheries associate professor and project coinvestigator. “Habitat losses due to intensive commercial forestry, agriculture and urban development pose serious threats to the tortoise’s survival.”

It is now listed as a federally threatened species across the western portion of its range, which includes Alabama, Mississippi and southeastern Louisiana, Jones added.

“The concern is not just for the gopher tortoise, but also for more than 360 other species which are dependent on these same habitats,” Jones said.

Better methods to inventory and manage gopher tortoise habitats are essential for monitoring this species and bringing about its eventual recovery. Scientists in Mississippi State University’s Forest and Wildlife Research Center, in cooperation with the U.S. Army Construction Engineering Research Laboratory, embarked on a study to better understand the management requirements for longleaf pine forests to sustain tortoise populations.

Some of the largest populations of gopher tortoises in Mississippi occur on Camp Shelby Training Site and DeSoto National Forest. Camp Shelby, one of the largest Army National Guard training sites, serves as training grounds for more than 100,000 troops each year.

“The land bases offer an excellent place to conduct research on tortoises,” Jones said. “To accomplish this work, we count burrow openings and measure plant and soil conditions around burrows. The tortoises are typically shy and difficult to observe.”

Gopher tortoises spend much of their time in burrows that may be as deep as 6 feet. They feed and bask near their burrows during daylight hours in the spring, summer and early fall. In the winter, they are fairly inactive, taking cover in their underground burrows. They may come above ground to bask on warm winter days in some areas of their range, Jones added.

To determine why the tortoises are located where they are, scientists are using remote-sensing technologies coupled with ground-based field surveys to assess the habitat characteristics where tortoises occur and where they are absent. This approach may help better understand what tortoises need for survival.

The first phase of the study involved ground-based field surveys and analyses to document characteristics of habitat on current or previously inhabited sites. These locations are being contrasted with characteristics of areas that are not used by gopher tortoises.

“Using remote-sensing data, we can assess and identify habitat characteristics in an effort to model those most critical to tortoise survival,” said David Evans, forestry professor and coinvestigator.

The primary data used for the remote-sensing assessment is LiDAR (light detection and ranging), which uses pulses of laser-light energy emitted from an airplane to map the structural features of the Earth’s surface, Evans added.

LiDAR data were collected and compiled by scientists in the University of Texas’ Center for Space Research. The data are being used to determine height and density of overstory and midstory vegetation around gopher tortoise burrows and surrounding lands.

“The techniques we are using to determine gopher tortoise habitats were developed in a similar study of red-cockaded woodpecker habitat near Ft. Bragg, North Carolina,” Evans noted.

The red-cockaded woodpecker is also considered an endangered species throughout its range and prefers long-leaf pine forest habitat like the gopher tortoise.

“Once complete, the study will provide managers with a set of new tools to identify and manage areas which provide suitable habitat for the gopher tortoise, the red-cockaded woodpecker and perhaps other threatened or endangered species,” Evans said.

Additionally, areas that could easily be converted into suitable environments can be prioritized.

“Increasing habitat and management will allow the gopher tortoise, and other species, to remain a viable component of the natural ecosystem,” Evans noted.
Good Health Care Helps Horses Age Gracefully

By Karen Templeton

Gray hair, stiff joints, poor teeth and weight changes are not just signs of aging in humans; they afflict horses as well.

Molly Nicodemus, an associate professor of animal and dairy sciences at Mississippi State University, said horses often display noticeable signs of aging. Although they vary from horse to horse, these indicators can appear as early as 15 years of age. Nicodemus said owners may notice stiffness, graying hair and loss of muscle tone in their horses.

“There also may be major changes in weight that can be alarming,” she said. “The drastic change in weight or the loss of muscle tone makes most owners fearful that something is really wrong.”

The solution can be quite simple in many cases.

“A change in diet can dramatically improve an aging horse’s health,” Nicodemus added. “Simply switching to a healthier feed can make a tremendous impact.”

As horses age, their nutritional requirements change. Intestinal tracts may not function efficiently in older horses, making it more difficult for them to digest food to process into energy. Unhealthy or missing teeth can also contribute to changes in a horse’s health. Standard feeds can be high in sugar and starch, both of which are unhealthy for older horses. Still, owners may hesitate to upgrade horse feed because of higher costs.

“Many horse owners cut corners by purchasing the cheaper feed, but they are really doing their animals a disservice,” Nicodemus said. “A small investment in better quality feed can save money down the road. Horses with nutrition deficits require more veterinary care and could develop more significant health problems.”

Often, larger portions of standard feed must be given to aging horses for them to get all of the necessary nutrients.

“With the senior and higher quality feeds, the essential nutrients are provided in each portion, so in most cases, owners don’t have to provide as much of it,” Nicodemus said.

Nicodemus has seen firsthand the benefits of changing a horse’s diet.

“I’ve had more than a few experiences with horses that had always been easy keepers, in good shape, with beautiful hair coats,” she said. “Then, all of a sudden, they lose or gain a lot of weight, they become slightly feeble, and there is a loss of muscling in their back and hindquarters.”

Nicodemus said changing to a senior feed or a feed higher in nutrients could get a horse back on track.

“It is almost like giving your horse a few years of its life back, and it is all due to doing something very easy — upgrading its feed,” she said.

Owners may hesitate to exercise their senior horses because they are concerned about overworking them. But actually, exercise can be good for older horses.

“Exercise is great because it gets them out and moving. Owners should spend more time with their geriatric horses, rather than leaving them as pasture ornaments,” Nicodemus said. “One-on-one interaction allows owners the opportunity to notice any changes in their horse’s behavior and performance.”

To stay updated on how to care for geriatric horses, Nicodemus urged owners to maintain regular veterinary care. Also, take advantage of available resources from county Extension offices and equine organizations, such as the Mississippi Quarter Horse Association.

Beth Campton, an MQHA representative, said the association recognizes the need to provide up-to-date resources to those in the horse community.

“We provide free seminars on equine care at the Dixie National Quarter Horse Convention,” she said. “The seminars cover nutrition and exercise for horses, including senior horses. We also provide links on our Web site to timely information for horse owners.”

Nicodemus said paying attention and being proactive in caring for horses can help them age gracefully.

“A little extra work early on can go a long way. We never want to see owners give up on their horses,” she said. “Owning a horse requires a certain kind of commitment from the very beginning. Being receptive to horses’ needs can help keep them healthy and comfortable throughout their lives.”
Lawrence County

**County Seat:** Monticello

**Population:** 13,948

**Municipalities:** Monticello, Silver Creek, and New Hebron

**Commodities:** Catfish, Cattle, Christmas Trees, Corn, Cotton, Dairy, Daylilies, Eggs, Forages, Goats, Hay, Horses, Oats, Peanuts, Poultry, Sheep, Shiitake Mushrooms, Soybeans, Timber and Wheat

**Industries:** Agriculture, Greenhouse Nurseries and Organic Fertilizer Production, Aquaculture, Prepared fresh and frozen catfish, Forestry, Cabinetry, Christmas Trees, Liner Board, Logging, Lumber, Railroad Ties and Timber, Manufacturing, Concrete, Water Screens and Dredging Buckets, Mining, Natural Gas and Petroleum

**Natural Resources:**
Lawrence County is home to game-rich forests and lakes, along with many streams that flow into the Pearl River. These resources make Lawrence County one of the best spots in the state for hunting and fishing. Lake Mary Crawford, operated by the Department of Wildlife, Fisheries and Parks, covers 135 acres and has two boat ramps, 20 camping sites and other facilities. Cooper’s Ferry Park, a downtown riverside park on the Pearl River, features a scenic overlook deck, nature trail, walking track, gazebo, and butterfly garden maintained by the Lawrence County Master Gardeners. Atwood Water Park on has 100 camping sites and facilities.

**History Notes:** Lawrence County was founded in 1811 and has provided Mississippi with three governors. Charles Lynch, Hiram Runnels and A.J. Longino. Gov. Longino served from 1900 to 1904, and the new state capitol was built during his administration. It was also Gov. Longino who invited President Theodore Roosevelt to hunt bear in the Mississippi Delta, a trip that resulted in the term “teddy bear.”

**Attractions:** Atwood Music Festival, Lawrence County Civic Center Winter Gala, Swan Lake Golf Course, New Hebron Pulpwood Festival, Robinson Retreat Rodeo, Cooper’s Ferry Park, Lawrence County Regional History Museum, the Longino House and 21 sites listed in the National Register of Historic Places.

**Did you know?**
Monticello was the Mississippi state capitol for one day in 1821.

"Lawrence County has a diverse agriculture industry featuring ‘a little of everything ag’ that Mississippi is known for. From catfish, to timber, to cotton, to cattle, Lawrence County has it all. The people of Lawrence County are caring, gentle and kind, and the way of life is slowed down a bit compared to surrounding areas. Working for the Extension Service in Lawrence County is a joy as each day brings something different. Most of our county’s residents still plant gardens, make quilts, sew, participate in 4-H programs and know they can call the Extension office for anything."

Amanda Walker, Extension County Director

MSU in Lawrence County:
Lawrence County Extension Office
0435 Brinson St., Apt. B
Monticello, MS 39654-6003
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As Mississippi and other Southeastern states were settled, upland areas were cleared, tilled and farmed until yields declined to an unprofitable level, and then low production sites were converted to pasture or allowed to reforest. Major reasons for yield decline were erosion of tilled topsoil and nutrient removal by crop harvesting and soil loss. Because of the amount and intensity of rainfall in the Southeast, tilled fields on sloping sites can lose 15 to 20 tons of soil per acre annually. Agriculture with soil losses of this magnitude is not sustainable.

When tillage ceases and permanent vegetative cover is established, improvements in the soil can begin to occur. Vegetative cover protects the soil surface by absorbing energy of raindrop impact, a major factor in detachment of soil particles and the onset of erosion. Runoff is slowed as it moves through the plant stems, leaves and debris covering the soil surface. Soil erosion is reduced dramatically. Organic matter begins to accumulate in the shallow surface soil layer, helping to improve soil structure and bind soil particles to further resist erosive forces. Earthworm populations increase and feed on dead leaves from the vegetative cover. Their burrows serve as conduits for rainfall infiltration into the soil. Large, stable pores created by earthworms and other burrowing creatures are particularly valuable in increasing water infiltration. Doubling the diameter of the pore increases infiltration more than four times.

Periodically, in response to high commodity prices, upland sites in permanent vegetation have been tilled and converted to annual cropping. The latest episode in this cycle occurred during the 1970s when soybean prices, at various times, were double or triple the long-term average. Fences were removed, pastures were plowed, woodlands were sheared, raked and burned, and soybeans were planted. Initially, yields were high but then declined, along with commodity prices. The Conservation Reserve Program was created during the 1980s to provide incentives for landowners to reestablish permanent vegetation on highly erodible sites.

Currently, economic and political conditions may favor another cycle of crop production on upland areas. Commodity prices for corn, wheat and soybeans have been double, or more, than the long-term average at various times during the past year. Conservation Reserve contracts are expiring, which will free land for other uses and stop the income stream derived from CRP contracts. Soil productivity potential has recovered from 10 to 15 years of permanent vegetative cover. Interest in feedstocks for biofuels as a renewable source of energy promises to help support commodity prices. The current federal administration seems committed to continuing or increasing support for alternative energy sources, including biofuels.

Recent technological advances have made development of a no-tillage system possible in the Southeast. Rather than tilling to control vegetation, a broad-spectrum herbicide is applied at or before planting. The planter cuts through surface residue and opens a narrow slit to ensure seed-soil contact. A press wheel follows to close the slit and cover the seed. Genetically modified crop varieties tolerate postemergence application of broad-spectrum herbicides. Approximately 3 weeks after crop emergence, a postemergence herbicide application is made. In most cases, this provides season-long weed control. Fields are monitored for late weed development in case a second postemergence application is required.

Benefits accumulated under the perennial vegetation are retained with no-tillage. Earthworm burrows continue to serve as conduits for rainfall infiltration, and the earthworms continue to function in this environment. Tillage destroys continuity of the burrows so they no longer function, and burying surface residue eliminates the earthworms’ food supply. Residue from killed sod continues to protect the soil surface from erosive forces, and residue from the harvested crop adds to the surface cover. Soil loss from no-tillage fields following sod is little more than from undisturbed sod fields. Increased rainfall infiltration compared with tilled fields and reduced evaporation from the soil surface translates into more water for the crop during dry periods and higher crop yields when rainfall is limiting. In the Midwest, technology permitted development and adoption of no-tillage in the 1960s. A long-term study in Ohio demonstrated that yields on upland sites were not only higher with no-tillage, there was no indication the soil needed tilling for any reason after more than 40 years.

As with any production system, skillful management is required for optimum results. Sod fields in the Conservation Reserve Program are likely to have low nutrient status and low pH, which must be determined by soil test and corrected before converting to crops. Biotypes of weeds have evolved that tolerate some of the most effective herbicides used in the system. Rotation of crops and inclusion of effective residual herbicides serve to minimize weed problems. Some interest is being expressed in removing crop residues as a source of biofuel. In the Southeast, no-tillage systems on upland sites require residue from crops, applied animal waste, controlled weeds or a cover crop to function best.

With proper management, no-tillage offers a sustainable production system for upland sites in the Southeast.
Two Outstanding Workers Receive MSU Awards

John Coccaro and Juan Silva’s leadership and outstanding contributions to their fields earned them 2008 Outstanding Worker Awards at Mississippi State University.

Coccaro received the MSU Extension Service’s Outstanding Professional Award, and Silva received the Mississippi Agricultural and Forestry Experiment Station Research Award. The awards were given at the joint annual conference for the Extension Service and MAFES.

Coccaro has worked for Extension for 25 years and is the director in Warren County, the county where he was raised. In addition to his work with agriculture, he is a cochair for the Family Resource Management Program Priority Group and is part of the success of the financial and housing programs in the county.

Coccaro was praised for his leadership in innovative programming and his ability to adopt new educational technologies. He developed an online blog to help serve his clients and always goes the extra mile in promoting Extension educational initiatives with the media and community. A cornerstone of Coccaro’s program is his ability to recruit volunteers. He has recruited 32 master gardeners, 25 money mentor volunteers and 42 Mississippi homemaker volunteers to serve their county.

“John’s relationships with members of his community and the state are outstanding,” said Bobbie Shaffett, Extension family resource management specialist. “He empowers community members to make significant contributions in serving their peers. He makes it look easy with his cheerful, can-do attitude.”

Silva, an MSU alumnus, is a professor in the Department of Food Science, Nutrition and Health Promotion. Silva’s research has benefitted the food industry not only in the state, but across the nation and overseas.

Silva is well known for his research in novel uses for blueberries. He explores blueberry storage issues and serves on the U.S. Highbush Blueberry Council’s Food Safety Committee, a group created to develop a food safety plan for the industry worldwide.

His research has impacted aquaculture and vegetable processing. Silva is considered to be a leading authority in food safety issues in catfish production. His seafood and catfish industry research findings have been submitted to Congress and the U.S. Department of Agriculture.

“Dr. Silva has built a reputation based on sound science and hard work,” said Benji Mikel, professor and head of the Department of Food Science, Nutrition and Health Promotion. “He is brutally honest but diplomatic in his research findings and sees obstacles unveiled by research as opportunities to explore innovative techniques in solving issues.”

Amburgey Receives International Wood Science Honor

Terry L. Amburgey, a professor in the MSU Forest and Wildlife Research Center, has been selected as a fellow of the International Academy of Wood Science based on his outstanding contributions to the field.

He currently leads an interdisciplinary research team focusing on natural challenges to Southern housing. Involving MSU faculty members in forest products, engineering, landscape architecture and architecture, the group works to ensure that new homes in the region will survive various insect infestations, high heat and humidity, fungi and mold, and other problems.

A Giles Distinguished Professor — MSU’s highest faculty honor — Amburgey joined the faculty nearly three decades ago as an authority on the prevention of wood-structure deterioration.

“Dr. Amburgey is considered a national expert on wood preservation, including the prevention and control of decay fungi
and insects in wood products,” said George Hopper, director of the research center and dean of MSU’s College of Forest Resources.

Founded in 1966, the International Academy of World Science is an assembly of professionals in all areas of wood science and technology.

**CVM’s Bushby Wins ASPCA Award**

Dr. Phil Bushby received the 2008 Henry Bergh Award from the American Society for the Prevention of Cruelty to Animals (ASPCA) for his animal welfare efforts. The award recognizes Bushby’s work in acquainting veterinary students to animal shelters across Mississippi and educating them about the problem of pet overpopulation and ways they can play a role in the solution.

Bushby is the Marcia Lane Endowed Professor of Humane Ethics and Animal Welfare in CVM’s Department of Clinical Sciences.

The annual Bergh Award recognizes those who have worked on behalf of animal welfare, as well as animal heroes that have demonstrated extraordinary efforts on behalf of humans.

In addition to his work in the state, Bushby has traveled abroad speaking on spay/neuter issues, which “has been an extraordinary benefit for animal welfare on the international level,” according Ed Sayers, ASPCA president and CEO.

**College of Forest Resources Announces New Leadership**

A Mississippi State professor of forestry has been appointed to a new administrative role in the university’s College of Forest Resources. Jim Shepard, former head of forestry, is the new associate director of research for the Forest and Wildlife Research Center (FWRC) and the Mississippi Water Resources Research Institute (MWRRI).

“We are thrilled to have Jim assume this new administrative duty,” said Forest Resources Dean George Hopper, who serves as director of the FWRC and MWRRI. Sheppard, who joined the MSU faculty in 2005, received his bachelor’s and doctoral degrees from Mississippi State University and a master’s degree from Purdue University. He returned to the university after 15 years with the National Council for Air and Stream Improvement (NCASI) in Florida.

“Dr. Shepard has done an outstanding job as department head,” Hopper said. “He has a wealth of research planning and project management experience, including a vast knowledge of hydrology and wetlands, which will serve the research center and water institute well into the future.”

Shepard held several positions at NCASI, including sustainable forestry program manager, forest wetlands program manager and forest environmental scientist. He has also held positions in academia, including a research scientist position at the State University of New York College of Environmental Science and Forestry and a courtesy associate professor position at the University of Florida.

Andrew Ezell, forestry professor, will serve as interim head of the Department of Forestry. A national search will be conducted to fill the vacant head position.

The FWRC was established in 1994 to conduct research and technical assistance programs that promote efficient management and use of the forest, wildlife and fisheries resources of the region. The MWRRI, which was established in 1964 and became part of the FWRC in 2006, is a statewide center that coordinates a research and development program to help solve water and water-related land-use problems in the state.
Real estate is often overlooked as a method of making a charitable gift to Mississippi State University, but the MSU Foundation is taking steps to ensure alumni and friends are aware that gifts of real property are an excellent way to invest in the university while receiving a personal gain.

Real estate may be given for charitable purposes through either the Bulldog Properties or Bulldog Forest programs. Gifts of real estate to Bulldog Properties may be liquidated upon receipt to benefit the donor and the university, while gifts designated for the Bulldog Forest may be held for an extended period with funds generated from timber sales, hunting leases, oil and gas leases, conservation programs and other means being used by the university for a donor-specified charitable purpose. In turn, these gifts may be used to benefit any area of Mississippi State, including athletics, scholarship support for talented students, endowed faculty positions and campus beautification. Proceeds from these gifts may also be used to assist with the renovation and construction of facilities.

As part of the MSU Foundation’s expanded mission, veteran fundraisers Jud Skelton and Jeff Little are assuming additional administrative roles. Skelton will direct the Bulldog Properties program, while Little will coordinate the Bulldog Forest program. Both fundraisers will continue in their respective roles as development directors for the College of Agriculture and Life Sciences and the College of Forest Resources. Skelton joined the university’s fundraising team in 2001; Little joined in 2004.

“Many donors would like to support Mississippi State but are unable to do so with a more traditional giving method because of economic concerns or because of the type of assets that they have,” said Skelton. “The Bulldog Properties and the Bulldog Forest programs will enable us to become more proactive in assisting alumni and friends who are interested in making a significant charitable gift through methods other than an outright gift of cash.”

Among others, types of real estate gifts that may be considered by the MSU Foundation include:

- Residential homes;
- Vacation homes and condominiums;
- Timberland and recreational property;
- Agricultural, commercial, investment and undeveloped property; and
- Mineral interests.

Property may be given outright, bequeathed or used to create a retained life estate, a charitable gift annuity or a
charitable remainder trust. Donors who choose to support Mississippi State through gifts of real estate may also benefit in a variety of ways, such as receiving a lifetime income, eliminating the burden of ownership and gaining certain tax advantages.

“The Bulldog Forest program has been in place for a couple of years, and we’ve had significant interest by donors who want to preserve their land while at the same time generating scholarship revenue, establishing much-needed faculty positions and creating outdoor classrooms for learning and research,” said Little. “Donating timberland to Mississippi State’s Bulldog Forest program also allows donors to leave a lasting legacy in their family’s name.”

To receive a complimentary copy of the MSU Foundation’s Guide to Giving Real Property, please call (662) 325-8112 or visit our Web site at www.msufoundation.com/ways/estate. For details about these new giving programs, personal illustrations based on actual circumstances or technical assistance with the real estate giving process, contact Skelton at jskelton@foundation.msstate.edu; Little at jlittle@foundation.msstate.edu.

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It’s all in the name. Check it out for news and information from the Division of Agriculture, Forestry and Veterinary Medicine.