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MEGHAN CARR
MEMPHIS ZOO



Jay Adkins

Researchers apply expertise to panda reproduction

By Laura Whelan

It's not unusual for MAFES animal and dairy scientist Scott Willard to find himself working with black and white animals, but they are usually Holstein dairy cattle. His latest project, however, is with more exotic subjects—the Memphis Zoo's newest residents, giant pandas Ya Ya and Le Le.

Willard leads a team conducting reproductive research on Ya Ya, a 2-year-old female on loan from China's Beijing Zoo, and Le Le, a 4-year-old male on loan from the Shanghai Zoo.

“Studying the reproductive status of pandas is essential in helping this endangered animal breed. Female pandas are only able to get pregnant three or four days out of the year, which is a very small window for reproductive success,” Willard said.

Willard and Brian Rude, also a MAFES animal and dairy scientist, used their expertise in livestock reproduction and nutrition to create a panda research proposal, which was accepted and funded by the Memphis Zoo and implemented when the pandas arrived from China in early April.

Willard monitors the many hormones present in the pandas' urine and fecal samples, analyzing them for influence by reproductive behavior, time of year, and environmental factors. This noninvasive approach will not require handling the animals to obtain blood samples, and it will be tied to Rude's nutrition studies.

“It is everyone's hope that Ya Ya and Le Le will mate, and hopefully our research efforts will aid in that process,” Willard said. “Examining the pandas' hormones may help us understand the prime conditions for reproduction, enabling us to make reproductive management plans for Ya Ya and Le Le, as well as pandas in other zoos or conservation facilities.”

Meghan Carr, a research biologist at the Memphis Zoo said the importance of studying giant pandas is to better understand why they are endangered and to see what can be done to preserve their species and habitat.

“With only about 1,000 pandas living in the wild, it is extremely important that we examine their habitat, behavior, reproduction, and nutrition in order to save future generations,” she said.

Only about 150 pandas live in zoos or breeding centers around the world, and the establishment of breeding programs has long been a challenge for zookeepers, veterinarians, and researchers. Chinese facilities in Beijing, Shanghai and Chungqing have had the most success, with 34 surviving cubs, but few cubs have been born or survived outside of China.

The nutritional research conducted by Rude may determine ways pandas in the wild can be helped to survive and reproduce more successfully. He is studying the animals' nutrient requirements and how bamboo selection meets these



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requirements. Remote monitoring of panda eating habits in the wild through fecal nutrient profiling also is part of the study.

“This species is quite different than the animals traditionally studied in this area of the country, but we can draw from our research and experience to study the nutritional habits and preferences of the pandas, hopefully opening doors to help protect and preserve them,” Rude said. “We get to use local tools and research to study concerns with a global impact.”

Pandas consume a tremendous amount of bamboo, each eating about 15,000 pounds per year. Rude said the Memphis Zoo allots about 70 pounds of bamboo per day for each panda. The pandas also receive a daily supplemental biscuit fortified with vitamins and nutrients.

Seven species of bamboo from various Southeastern locations, including Coffeetown, Miss., are being grown for Ya Ya

and Le Le. Each type is being evaluated for nutrient quality. Rude also is studying which types of bamboo Ya Ya and Le Le prefer under different circumstances.



Brian Utley

Bamboo grove at USDA/ARS Whitten Plant Materials center in Coffeetown.

By coordinating reproductive and nutritional research, the scientists hope to establish techniques for monitoring the health and demographics of wild panda populations, including the number of males and females in a population and determining if any females are pregnant.

Willard and Rude have made a three-year research commitment with their current research plan, but they hope these efforts will continue throughout the pandas' 10-year stay in Memphis.

“Conservation efforts are long-term, so we hope to go down new paths and use new findings to assist with panda preservation,” Rude said.

NEW FISHY SOFTWARE AVAILABLE FOR CATFISH PRODUCERS



Marco Nicovich

Wallace Killcreas

For more than two decades, catfish producers across the Southeast have used Mississippi State University-produced software to help manage their operations. The latest version, Fishy 2003 Version 4.0 is now available through Catfish Farmers of America.

“A licensure agreement between Mississippi State and Catfish Farmers of America to market Fishy 4.0 was signed in April,” said Fishy programmer and MAFES agricultural economist Wallace Killcreas. “So far, farmers owning more than 24,000 water acres have bought one-year licenses.”

First developed in 1982, the Fishy program keeps records of all aspects of fish production, and analyzes and makes reports that allow producers to track fish numbers, feedings, weights, and sizes. The program can also predict harvests and feed needs. Version 4.0 has refined some of those operations, according to Killcreas.

“We’ve added improvements to make the operation of multiple farms safe and seamless and reports more flexible and easier to read,” he said. “Conversion of existing Fishy operations to Fishy 4.0 is usually just a 5-10 minute chore. Detailed information that comes with the program should make the learning curve for new users short.”

For new users with less than 1,000 water acres, setup is usually a 1-2 day process of installing the program, checking out Fishy background information, entering local user pond data, learning how to feed fish with the program, and checking out the 38 different reports available in Fishy.

Killcreas is available for help if Fishy 4.0 licensees encounter a problem with the program.

Fishy 4.0 costs \$125 per year for operations with 160 water acres or less. Costs for producers with more than 160 water acres are on a sliding scale, with a cap of \$550 per year for operations with more than 1,280 water acres.

Call Killcreas at (662) 325-2672 for more information or visit <http://www.agecon.msstate.edu/wk> on the web. To order a Fishy 4.0 license, call Catfish Farmers of America at (662) 887-2699.