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Water of Life

By Joanie Baker Hendricks, The Daily News

Chinese orphanages and caves have one thing in common - the water that runs through them.

And recently, officials from Western Kentucky University and Mammoth Cave National Park traveled to China to partner in improving the karst water area that has many similarities to the western Kentucky region.

The efforts not only reaped a partnership between Mammoth Cave and three Chinese parks, but ultimately provided clean and safe drinking water to thousands of infants and elderly in government-run orphanages and homes.

Water in China and Western Kentucky areas comes from underground caves and is exposed to bacteria that need to be filtered. Chris Groves, geography professor at WKU and director of the school's Hoffman Environmental Institute, has been leading research in karst water landscapes and the efforts to create drinking supplies.

In August, Groves led a workshop in China to teach government officials techniques to develop water resources and manage and protect those resources.

As part of the program, geography student Chrissie Hollon presented some of her research on using dye tracing to study water resources, and Mammoth Cave Superintendent Pat Reed discussed resource management.

But the workshop was just a fraction of what the local representatives were able to accomplish.

 -- [Click here for a photo slideshow from WKU's trip to China.](#)

Filtering problems for youth

The trip followed years of work by Groves to provide the installation of 105 water purification systems, which give more than 27,000 orphans and elderly safe drinking water in China's government-run Social Welfare Institutes.

Groves said the university's China Environmental Health Project partnered with the foundation A Child's Right and the U.S. Agency for International Development to install the drinking water systems.

Because of the lack of filtration systems in China, most people have to boil their water to remove bacteria that flows from the faucets of even the country's finest hotels.

The problem, Groves said, is in the institutions that house infants and the country's elderly, where there may not be enough workers to boil water for all the formula the children need.

Thus, Groves said it is common for the thousands of babies to drink bacteria-filled formula - with human and animal waste - and constantly battle the resulting diseases.

Groves said the problem came to his attention when he and his wife adopted their two daughters from China. They learned of A Child's Right, which was working to improve the water conditions by developing treatment systems for more than 100 orphanages.

The university has partnered with the program, led by founder Eric Stowe, to install the low-cost, easily maintained treatment systems in 105 Social Welfare Institutes in seven of China's poorest provinces, Groves said. In those institutes, 14,884 children will now have safe water to drink.

Groves said while he wanted more of his students there to see the two-hour installation of the filtration systems and

the immediate results, he was thrilled one of his students saw it first-hand.

"It was different for a student to be there, in a place where kids are having health issues," Groves said. "They were drinking water with bacteria in their formula in the morning but by the end of the day, they were not drinking contaminated water. For Chrissie to see that, it's a lot different than hearing a teacher ramble on about the crisis in a classroom."

Groves said it was one of the most rewarding experiences he has ever had after watching Stowe take the first drink of clean water from the new system.

"It was exactly what you would imagine," Groves said of the satisfaction. "But the most fantastic part, the most satisfying part, is that all the things we're doing and all the efforts and years and years in China, I am convinced we have done positive things and they will continue to have benefits from our work."

Photojournalism professors James Kenney and Tim Broekema documented the installation and resulting improvements.

Partnering with Chinese parks

During the third leg of the 10-day trip to China, Mammoth Caves' Reed signed a sister park agreement with three Chinese parks.

The no-cost arrangement is between Mammoth Cave National Park World Heritage Site, Shilin Stone Forest National Park, Libo Zhangjiang National Park and Wulong National Park, all members of the South China Karst World Heritage Site.

Reed said while all the caves are considered karst water areas, one of the biggest differences between Mammoth Cave and Shilin Stone Forest is that the washed and eroded rock, typical of karst land forms, is on the surface. He described the cave as having limestone "pinnacles rising almost perpendicular to the ground."

Reed said signing the partnership marks the first formal agreement Mammoth Cave has made with any other international site, and gives true meaning to an international agreement.

The partnership will allow cave officials to exchange scientific research, management practices and educational techniques for visitors of the sites.

Reed said the cave is interested in sending staff and possibly students for training in China to see how cave tours are conducted differently in the foreign land.

"Their tours are often based on folklore and storytelling," Reed said.

During a tour of the Shilin Stone Forest, Reed said they described some of the vertical limestone columns by telling the story of an elephant. Others involved the history of a man and woman falling in love.

In the United States, tours emphasize the natural sciences rather than natural history, Reed said, but Mammoth Cave could take some of the ideas from the Chinese.

"We both have a lot to learn from each other," he said. "We have things we can learn from each other about managing a large cave."

With the partnership, the parks will soon provide cross-translation brochures about the different parks with Web links on the Chinese park sites directing visitors to the Mammoth Cave Web site.

Eventually, the parks also will feature exhibits in the visitor's centers about the different caves in the Sister Park agreement, the superintendent said.

Reed said he sees the international tourism benefit as a way of helping the area develop economically as well. He pointed out that if officials from a Chinese factory or industry were interested in developing in western Kentucky, they may see the partnership as a welcome marketing point.

Reed said the trip was a huge success and reflection of the university's international reach.

"I've been working in national parks for 40 years and I can't recall a better relationship between a university and

national park," Reed said. "I've never experienced one better than the one we have with Western."