

By David A. Ek

During the last two weeks of July, I participated in a 16-member cave and karst management delegation to the People's Republic of China. The trip was organized through auspices of People to People, Citizen Ambassador Program. My own money was used for this trip and I was granted annual leave from Fort Clatsop National Memorial, where I am the Resource Management Specialist. Prior to Fort Clatsop, I was Assistant Cave Resource Management Specialist at Carlsbad Caverns NP.

The trip's purpose was to foster and develop exchanges with professional counterparts and to build a broader perspective toward worldwide cave and karst concerns. We obtained official permission for the U.S. to conduct a cave exploration in Spring 1995. Information on the structure, organization, etc., of the Institute of Karst Geology also proved valuable.

The delegation leader was Cave Specialist Ronald C. Kerbo from the NPS Southwest Regional Office. Except for myself, the delegation members were from the National Speleological Society or the Cave Research Foundation.

Our delegation flew into Beijing, capital of the People's Republic of China, where we met with members of the China Association for Science and Technology, who hosted our visit. From Beijing, we traveled south by air and bus to Southeast China, stopping to visit developed caves, wild caves, and non-cave areas along the way. The non-cave areas included the Hunan Geologic and Mineralogic Museum, the Great Wall, the Ming Tombs, a Tao temple, the Forbidden City, a cruise on the Li River, many mighty fine (real) Chinese restaurants, and portions of the incredibly beautiful tropical and sub-tropical countryside of southeastern tropical and sub-tropical countryside of southeastern to east-central China.

Having the opportunity to see the country and visit with the people was a most rewarding aspect of the trip. I learned a little about the culture and experienced first-hand the rice fields near Chenzhou, the high-pressure



Villagers in southeastern China working in their fields. (PHOTO BY DAVID EK)

souvenir booths along the Great Wall, eating pig lung and ears, eel, rat and chicken feet, and walking through the markets and back alleys of a city of 11 million.

Due partly to the large population, long human history, and poor economy, the caves, karst, and water resources of China have been highly impacted. Threats of particular con-

cern include nearby coal mining and other resource extraction activities as well as pollution and siltation from agricultural practices. Unlike the situation in the U.S., most of China's karst regions lie in the valleys between the lowland cities and the agricultural areas on higher plateaus and hillsides. This condition allows all the chemicals, silt, and other agricultural by-products to pollute the caves. Since caves serve as efficient conduits to the groundwater, in a relatively short distance large

aquifers and countless people are affected.

To begin to understand and deal with these many threats, China has created an Institute of Karst Geology research center in Guilin, China. The Institute has many knowledgeable and talented people associated with it; however, funding is very poor. For instance, they are awaiting their first computer and FAX machine.

While at the Institute of Karst Geology, our delegation presented five papers. Kerbo gave a paper on caves and cave management within the NPS. John French discussed a statistical model he developed for a karst area in Alabama that predicts cave entrance locations. Bob Handley presented a paper on historic explorations of the Organ Cave System in West Virginia. Ron Delano's paper dealt with recognizing and compensating for parallax diffraction while conducting cave surveys. My paper concerned biologic inventory and environmental preference investigations of epigeal fauna within Carlsbad Caverns NP.

During one of our exchanges, we discussed the worldwide importance of cave and karst resources. Karst comprises approximately 12 percent of the world's landforms. The People's Republic of China and the U.S. contain some of the world's most extensive karst. As examples of their importance, China contains approximately 17 percent of the world's 20 million square kilometers of karst, while 25 percent of U.S. fresh water resources is held in karstic landforms.

China has for hundreds of years recognized the importance of caves and karst to water quality and the health and economy of the public. In China, unlike the U.S., the



Dr. Ron Delano approaches Songjadong Cave. The cave entrance is out of sight in the bottom of the sinkhole. (PHOTO BY DAVID EK)

primary interest in caves is for scientific (principally hydrological) research. In the U.S., the leading interest in caves is recreational. Much research is taking place in U.S. caves, but it does not come close to the scientific potential that caves hold. Many advanced research topics in hydrology, paleontology, biology, sedimentology, mineralogy, and global climate change are best answered in the unique environment of caves. Responsible research in caves at this level began only fairly recently. In spite of their wide distribution and scientific importance, caves have largely been ignored or misunderstood by the U.S. scientific community, and even at times by the NPS.

Caves are an important and unique biome within the National Park System. Sixty NPS units (17%) are known to contain cave resources. They occur throughout all Regions, particularly the Western, Rocky Mountain, Southwest, Southeast, and Pacific Northwest. The number of NPS positions created to deal specifically with these numerous and unique resources are: four to five at the park level, one at the regional level, and one with policy contact duties at the national level.

Impacts to caves are not unique to China. Coal mines in West Virginia and gas exploration in New Mexico are currently posing a tremendous threat to world class cave re-

sources. Siltation from logging activities in Washington and Alaska are impacting caves and compromising their value for research. Entire cities in Kentucky have highly contaminated groundwater due to sewage and other contaminants being dumped into sinkholes. Significant archeological resources are being destroyed within caves in Arizona and Hawaii. The list goes on and on.

To deal effectively with these and other threats within the U.S., managers and researchers need to develop a more appropriate and responsible level of concern and attention toward caves and karst. More cave-related positions need to be established and a cave research facility and information repository developed. Still far behind China, the NPS is in the process of developing a Cave Research Institute in this country.

It was rewarding to visit Chinese caves, meet with fellow managers and researchers, and share information and ideas. Caves are a unique and much misunderstood resource. In light of the increasing threats to these resources in both countries, a more coordinated approach, at regional, national, and international levels, can be seen as necessary in order to deal with the complex issues involved.

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Tower Karsts just a few of the thousands located along the Li River in southeastern China. (PHOTO BY DAVID EK)

