

Caves and the NPS

By Ronal Kerbo

The U.S. National Park Service has the responsibility to manage more than 350 units, which include historic, cultural, recreational, and natural areas. Within natural areas are seven units that have been designated specifically to protect caves. However, well over 50 other units contain caves and cave systems that must be considered as integral segments of overall management schemes. Examples include Grand Canyon NP (which contains more known caves than any other park in the System); Ozark National Scenic Riverway, with many caves important to the regional hydrological system; and Hawaii Volcanoes NP, where large lava tube systems exist that are important cultural resource sites and that still serve as religious shrines for the Hawaiian people.

Each park must have a general management plan with a section that deals with management of natural resources, which may include caves or other karst features. In the past it was difficult for managers to think of caves, except as possible hazards to the public's wellbeing. Because of perceived difficulty in accessing caves, and the misunderstanding of their importance and relevance to ecosystems, they were not often thought of as assets except in those cases where they could be developed for general public entry. Only developed caves were managed with any degree of great concern, and most of that was aimed at personal safety and allowing the visiting public close proximity to major scenic features.

Misplaced Facilities

Even with these concerns for ready accessibility, many of the developed caves suffered from a management style that was inadequate for the long-term protection of the cave resources. An example is the large number of facilities that exist over such caves as Mammoth and Carlsbad Cavern. These facilities most often provide for visitor comfort and safety, NPS administration offices, and employee residences. The most important concerns here are the attendant gas and sewer lines that may overlie cave passages. With the passage of time, buried lines and fuel tanks located over caves can result in negative impacts. Leaks from any of these sources can go undetected for months, perhaps years. Legislation has been introduced to deal with underground fuel tanks, and parks have been taking critical looks at lines running in close proximity to caves.

A number of recent events have had, and will continue to have, positive effects on cave management. Within the last decade most of the major cave parks have either begun drafting cave management plans or already have approved such plans. As an example, Carlsbad Caverns NP's cave management plan addresses the following topics: cave permit programs; visitor use monitoring; resource protection techniques; and such items as cave gates, maintenance standards, research guidelines, and exploration guidelines. Other items included in separate action plans for specific caves, cover survey standards, disposal of bodily wastes, route marking, and concern for surface or subsurface activities that might directly impact natural systems.

Other important and positive actions relevant to caves include the passage of the Federal Cave Resources Protection Act in October 1988. This Act states that caves on Federal lands are an invaluable and irreplaceable part of the nation's natural heritage.

Caves also are addressed in the recently drafted NPS Resource Management Guidelines (NPS 77). Other provisions for cave management include the Wilderness Act, the Management Policies of the NPS, and the Endangered Species Act.

New Mexico Initiatives

The most recent step taken to insure a legitimate and positive image for caves in the scientific community was the passage of an act to conduct certain studies in the State of New Mexico, which, under Title 11 of the Act, provides for establishment of a Cave Research Institute and a Cave Research Program, both to be administered by the National Park Service, but not limited in its scope to that agency or lands under its jurisdiction.

This Institute and Program would allow for addressing such research topics as modern and paleo groundwater movement through carbonate rocks, the monitoring of global climate change, environmental monitoring, strategies for the recovery of oil and gas reserves, biological and microbiological community relationships, and the protection of subterranean resources from possible intrusion by oil and gas production leaks. The Institute could become the repository and exchange agency for worldwide speleological baseline data.

As sensitivity to and understanding of spelean resources continue to expand, perhaps we can prevent such things as the changing of cave airflow patterns, drastic modifications to a cave's microclimate, the alteration of surface water flow patterns in karst regions, the blocking or pollution of water infiltration routes, the introduction of foreign and harmful elements into a cave, disturbance of cave biota, and altering of natural cave ecosystems. Caves may finally come to be considered in their proper perspective — as an integral part of our land management mandate and ethic.

Educating the Public

The Cave Institute and Program could also play a vital role in educating the general public about the importance of caves and karstic landforms. It could afford the opportunity to investigate the cave environment, and provide educational tools for learning more about bats, other cave fauna, paleontology (many caves act as natural traps), and hydrology (dye tracing of karstic water courses has been a valuable tool in protecting park areas from the negative impacts of poorly placed landfills). The Program also could introduce people to other programs where speleological and karst research are being used to assist in the management of public and private lands.

Another important function of caves that could be explored through the Cave Research Program is their use as natural laboratories where paleoclimatic evidence has been stored, awaiting our discovery. The Grand Canyon packrat middens in caves have yielded pollen up to 4000 years old. The dry, dusty caves of the west side of Guadalupe Mountains NP have been great storehouses of pollen and sloth dung. Coring carefully selected speleothems in Carlsbad Cavern has given up indicators of paleomagnetism and paleoclimatic conditions. In the Devils Hole, a submerged cave system in Death Valley National Monument, researchers have produced a regional paleoclimate record by sampling travertine from the cave.

A last item that has enhanced the image of caves in the National Park System, has been recent discoveries

(Continued on page 6)

in Lechuguilla Cave, within Carlsbad Caverns NP. Scientists within the NPS, the USGS, other government agencies, and the private sector, are excited about the possibilities of using the cave to gather baseline data that will give us new insights into global warming theories. The passage leading into the major portions of the cave was blocked with loosely compacted rubble for perhaps many thousands of years. Now, recent explorations have led explorers and scientists "through the looking glass" into a world that has been relatively unaffected by the impacts of 20th Century life ... a real wonderland, where even Alice hasn't been.

Kerbo is Southwest Regional Cave Specialist. He was formerly Cave Specialist at Carlsbad Caverns NP.

Sources

"Cave Management in the National Park Service" by Dr. Milford Fletcher, (notes for a presentation at the 1st NPS Cave Management Seminar, March 1990.)

"Caves of the National Park Service" by Ronal Kerbo (ibid.) Kyim Cunningham (pers comm), Science Director for the Lechuguilla Cave Project.