

# **National Cave and Karst Research Institute 2003: Working Through Partnerships Towards America's Future**

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## **Abstract**

Congressional legislation directed the National Park Service (NPS) to establish the National Cave and Karst Research Institute in the Carlsbad, New Mexico, area to further speleological research, enhance public education, and promote environmentally sound cave and karst management. The legislation further requires that the NPS jointly administer the Institute with "a public or private agency, organization, or institution." The Institute has a national, even international, mission.

Currently, Institute funding primarily comes from two sources: The National Park Service and the State of New Mexico. As the Institute must at least equally match federal funds with non-federal funds, an important issue for the success of the Institute is establishing an extended network of non-federal funding sources, which might include non-federal grants, partnership initiatives, fee-based services, product sales, and public donations.

Determining the exact functions and organizational structure of the Institute within these requirements constitutes a major component of the current "Gearing Up" phase. The Institute staff has made major strides in extending the base of participants in this effort over the last six months, involving major academic, government, and non-profit organizations and several national laboratories nationwide. The goal remains to develop a broad coalition of diverse cave- and karst-related partners working together towards improving our national understanding and stewardship of these sensitive terrains.

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## **Pre-Institute Enabling Act History**

In 1990, Congress passed Public Law 101-578 (NCKRI, 2003a) directing the Secretary of the Interior, through the Director of the National Park Service, to establish and administer a Cave Research Program and prepare a proposal for Congress that examined the feasibility of a centralized National Cave and Karst Research Institute. The Secretary sent the National Cave and Karst Research Institute Study Report to Congress in December 1994. The 1994 Report made several key recommendations:

- The National Park Service and another entity, probably academic in nature, should jointly administer the Institute;
- The National Park Service would have ultimate responsibility for the Institute and would retain indirect control over its activities and programs, while the academic entity/managing partner would plan, coordinate, and administer the Institute and its programs;
- The Institute should be located in the vicinity of Carlsbad Caverns National Park;

- Its three essential missions would be information management, research, and education.

### **The National Cave and Karst Research Act of 1998**

Congress passed the National Cave and Karst Research Institute Act of 1998 generally following the recommendations of the 1994 Report (U.S. Congress, 1998). The stated purposes of the Institute are:

- to further the science of speleology;
- to centralize and standardize speleological information;
- to foster interdisciplinary cooperation in cave and karst research programs;
- to promote public education;
- to promote national and international cooperation in protecting the environment for the benefit of cave and karst landforms; and
- to promote and develop environmentally sound and sustainable resource management practices.

The legislation directed the Secretary of the Interior to create the Institute, acting through the National Park Service. It designated the Carlsbad, New Mexico, area as the home for the Institute and also stated that the Institute could either lease or build a suitable facility. Although the National Park Service would establish the Institute, Congress directed that the National Cave and Karst Research Institute be jointly administered by the National Park Service and a private or public partner and operated in accordance with the 1994 Report to Congress. A key “matching funds” provision was inserted by Congress, directing that the Secretary of the Interior may spend federal funds for the Institute only to the extent that they are matched by an equal amount from non-federal sources. The Institute may accept grants from private persons and transfers of funds from other federal agencies. However, the current interpretation of the legislation requires that funds provided by any federal agency (That is, USGS, USDA, EPA, NSF, NPS, and so on.) to support Institute programs must also be equally matched by non-federal funds.

### **Initial Development Phase**

The National Park Service assigned responsibility for implementing the Act jointly to the Intermountain Regional Office and the Geologic Resources Division, a national office. An initial challenge was that while the Act provided authority, Congress did not appropriate any

funding for the Institute at that time. In July 2000, the Geologic Resources Division hired Interim Director Zeldia Chapman Bailey on a term appointment to begin developing the Institute by defining the scope of operations, forming initial partnerships, securing both federal and non-federal funding, and developing proposed organizational structures and plans for a physical facility.

Interim Director Bailey’s assignment emphasized developing collaborative relationships and she traveled extensively, networking with a variety of groups. Bailey also started a tradition of e-mailing monthly summaries of Institute activities to interested individuals (NCKRI, 2003b). She launched a Web site for the Institute in September 2001 to provide general information on the Institute to a wider audience and to solicit input into the formational process of the Institute (NCKRI, 2003c).

### **Federal Working Group**

As part of this initial effort, the National Park Service established the National Cave and Karst Research Institute Federal Working Group. Twelve cave and karst land management experts represented the National Park Service, Bureau of Land Management, U.S. Fish and Wildlife Service, U.S.D.A. Forest Service, U.S. Environmental Protection Agency, and U.S. Geological Survey. They also communicated with cave and karst interest groups to provide their perspectives and to keep them informed on Institute activities.

The Working Group met twice yearly between December 2000 and February 2003. Meetings took place in different cities to allow individuals with interest in the development of the Institute to attend. During those two-plus developmental years, the Working Group provided guidance to the Interim Director concerning all aspects of establishing the Institute and worked on a wide range of issues ranging from the Institute’s mission and goals to building requirements, funding sources, and research priorities. The Federal Working Group also looked at the Institute’s possible organizational structure, management issues, and potential models for advisory boards. In December 2002, the National Park Service hired Dr Louise Hose as the Institute’s Director. The Interim Director’s position tenure ended in April 2003.

### **Why Carlsbad? Why New Mexico?**

The Institute’s enabling act specifies that it must locate in the vicinity of Carlsbad Caverns

National Park, but not within the boundaries. This directive followed the recommendation of the 1994 report, which also considered sites at or near Mammoth Cave, the Black Hills of South Dakota, Ozark Plateau, and the Colorado Plateau. The Carlsbad setting offered many advantages:

- The community has traditionally provided strong support for Carlsbad Caverns National Park and, more recently, Guadalupe Mountains National Park;
- Dozens of world-class caves in the area attract a stellar list of top cave and karst researchers from around the world each year;
- Dozens of caves in limestone and gypsum lie within a half-hour drive from town;
- Lava tubes are less than three hours away, providing a remarkable diversity of cave types nearby;
- The local economy has close ties with karst as the local aquifer and petroleum production occurs in karst.

However, probably the most compelling reason is that the City leaders and the New Mexico Congressional delegation aggressively sought support for establishing the Institute. They continue to provide strong, proactive support.

### **Summary of Some Recent Activities**

Funding the Institute presented the biggest initial challenge. The State of New Mexico stepped forward and provided the first formal funds for the National Cave and Karst Research Institute starting July 2001. The National Park Service equally matched the state's \$350,000 during the next federal fiscal year, FY2002. Both entities have continued to provide similar support in the following years.

Most of the State funds support the development of a Cave and Karst Studies undergraduate and graduate program at New Mexico Institute of Mining and Technology (New Mexico Tech) in Socorro, New Mexico. The National Park Service funding supports the development of the Institute and its activities in Carlsbad as well as provides support for a variety of collaborative projects with cave and karst programs across the country. Among the larger projects are the National Karst Map Project with the U.S. Geological Survey and a land managers' graduate program with Western Kentucky University.

The February 2003 signing of a Memorandum of Understanding by the Institute's three primary partners, the National Park Service, The City of Carlsbad, and New Mexico Tech,

paved the way for the design and construction of a headquarters building for the Institute. Among other issues, the Memorandum established a basis for cooperation in planning the "Institute's physical facility" as well as any individual cooperative agreements related to the financing, construction, and operation of the Institute building.

### **How Funding Works**

Current operational funds derive from three sources: (1) the National Park Service has an annual appropriations line of about \$350,000 to support the Institute; (2) the State of New Mexico also has an annual appropriations line of approximately \$350,000 to support cave/karst programs related to the Institute through New Mexico Tech; and (3) donations and other support provided by non-federal partners. A building fund for the Institute's headquarters building in Carlsbad currently contains about \$4,306,900 from three sources: (1) the State of New Mexico has appropriated \$1,350,000 to the City of Carlsbad for NCKRI headquarters; (2) the City of Carlsbad has promised an additional \$1,000,000 "in-kind" donation of land, roads, and utilities for the building; Congress has appropriated \$1,956,900 for the building to be passed from the National Park Service to the City of Carlsbad.

### **Role of the National Park Service's Geologic Resources Division**

The National Cave and Karst Research Institute shares a home within the Geologic Resources Division (Division) of the National Park Service in Denver, Colorado, with the National Park Service Cave and Karst Program. The Division provided the seed funding to bring in the Interim Director in 2000 and continues to supply a variety of support services and advice to the Institute, especially concerning policy, legal, and National Park Service and federal-related issues/efforts. Division Chief Dave Shaver administratively oversees the Institute for the Park Service.

### **Summary of Current Staffing and Activities**

The National Park Service hired Louise D. Hose as a permanent Institute Director in December 2002. Roger Scott, an National Park Service employee on intermittent status has worked part-time for the Institute throughout most of 2003. New Mexico Tech is currently

searching for a Chief Scientist to hire through a one-year, renewable contract. In addition, New Mexico Tech has a karst hydrologist, Lewis Land, assigned to the Institute. These four positions are stationed in Carlsbad. In Socorro, Penelope J. Boston has a half-time appointment to the Institute, which she uses to develop New Mexico Tech's Cave and Karst Studies academic program.

The current focus of the Institute lies in three areas: Working with the City towards designing the headquarters building, determining what NCKRI will do in the future, and addressing the jointly administered legislative mandate.

The City of Carlsbad will receive and manage all funds for the building project and they will own the building upon completion. However, the National Cave and Karst Research Institute Director, in consultation with the City, National Park Service, and New Mexico Tech representatives, is directing the interior building design. The City anticipates ground-breaking in early summer 2004 and building completion about the end of 2005.

While the purposes for creating the National Cave and Karst Research Institute are provided in the legislation, the language allows a broad range of interpretations concerning how the Institute will implement its mission. The core of many recent discussions revolves around whether the Institute will have in-house projects or should it limit itself to facilitating and supporting efforts by other organizations? Should the Institute initiate and lead efforts? If so, in which areas?

The 1994 Report to Congress suggested that the Institute would be administered on a daily basis by an academic entity with oversight by the National Park Service. There are no models within the Park Service or even the Department of Interior for such an organizational structure. Hence, the National Cave and Karst Research Institute has considered and extensively discussed with representatives of the broad cave/karst community a variety of models from other departments of the federal government.

### **Potential Models for a Jointly Administrated Institute**

Models associated with other federal departments include:

- Government-Government Model
  - An example would be the Leopold Institute, which operates through an inter-agency cooperative agreement between USDA-FS, BLM, NPS, USFWS, and USGS
    - § Focuses solely on all aspects of research and management for a single type of natural resource (wilderness)
    - § Partners with non-federal scientists through research projects, exchange programs, supporting visiting experts, sponsorships of lectures, workshops, and symposia, and involvement in professional activities and societies
  - Biggest disadvantage to this model appears to be that it provides little opportunity to aggressively seek the mandatory minimum of 50% non-federal funding
- Government-Owned, Contractor-Operated



- o Abundant examples in other federal departments
  - § National Aeronautics and Space Administration: Jet Propulsion Laboratory/California Institute of Technology-operated (one university)
  - § Department of Defense: Stanford Linear Accelerator/Stanford University-operated (one university)
  - § National Science Foundation: NCAR/UCAR (consortium of PhD-granting universities)
  - § Federal Aviation Administration: Center for Advanced Aviation System Development/ MITRE (non-profit corporation)
  - § Nuclear Regulatory Commission: Center for Nuclear Waste Regulatory Analyses/Southwest Research Institute (non-profit corporation)
  - § Department of Energy: Sandia Laboratories/Lockheed Martin (for-profit corporation)
  - § Treasury: IRS Research & Development Center/MITRE
- o All of these examples are mostly or entirely funded by federal funds and do not provide significant opportunity for raising the non-federal match
- Government-University Partnership Network - Cooperative Ecosystem Unit Network
  - o Based on biogeographic divisions, not thematic
  - o Each unit has a “Host” university (Level 1, PhD-granting institute) and network of affiliates
  - o National Park Service provides a full-time coordinator, other agency representation varies
  - o Units and governing councils comprise:
    - § Other universities and colleges
    - § Non-profit and for-profit corporations/organizations
    - § Other federal agencies
    - § Other government agencies
  - o Once again, most funding is federal and administration is mostly controlled by the Park Service, not jointly operated
- NSF - Science & Technology Centers
  - o Federal oversight and review, but they do not set the agenda
  - o A PhD-granting, research academic institute serves as lead
  - o Core of several other partners
    - § Variety of other academic institutes
    - § National laboratories
    - § Private industry
    - § Non-profit organizations

- o Must actively address 3 purposes through partnership efforts
  - § Cutting-edge research
  - § Knowledge transfer (industry, general public, etc.)
  - § Formal education
- o Must raise at least a one-third match from non-federal funds
- o STCs are thematic, but none focus on resource management issues
- o The model is markedly different from anything currently within the National Park Service domain

### **Developing Collaborative Relationships**

The enabling legislation requires that the Institute will be “jointly administered” by the National Park Service and another entity, the National Park Service will have “indirect control,” and the organizational model and operational plan must promise opportunities to raise at least 50% of the funding from outside the federal government. This last requirement demands that non-federal stakeholders play a major role towards developing and operating the National Cave and Karst Research Institute, including participation in the decision-making process. The Institute must develop true, collaborative partnerships to flourish. In order to address this need, it is useful to review the factors influencing the success of collaborations. Mattessich *et al.* (2001) identified them, in order, as:

1. Mutual respect, understanding, and trust between partners
2. Sufficient funds, materials, and time
3. Appropriate cross-section of members
4. Multiple layers of participation
5. Members see collaboration in their self-interest
6. Development of clear roles and policy guidelines
7. Open and frequent communications

Seeking to develop a sense of broad community investment and participation in the National Cave and Karst Research Institute, the Institute and two of its primary partners, New Mexico Tech and the National Park Service, invited a diverse group of representatives from eight federal programs, two state agencies, five non-profit organizations, and six academic programs to a two-day scoping session in Shepherdstown, West Virginia, in early October 2003. A professional facilitator led the Developing the Vision Workshop and worked through ideas on what the institute should do

and how it should be “jointly administered” (LEAD Alliance, 2003).

### **Plans for the Future**

Immediate plans for the future include continuing work on the building design (including a science library, museum, laboratories, and offices), producing the Institute’s first Annual Report for 2003, and drafting a five-year business plan covering issues including how the National Cave and Karst Research Institute will be administered, prioritize what activities the Institute will pursue, staffing, and fund raising. The exciting future will present unique challenges and opportunities for the entire cave and karst community and the Institute could place the United States as the clear leader in karst research and management.

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