



*U.S. Department of the Interior  
National Park Service  
Natural Resource Information Division*



**Geologic Mapping  
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The Natural Resource Inventory and Monitoring (I&M) Program was established to help with preventing the loss or impairment of significant natural resources in more than 250 of the 376 units of the National Park System<sup>1</sup>. Many natural resources in the system are subjected to unfavorable influences from a variety of sources, for example, air and water pollution, urban encroachment, and excessive visitation. Left unchecked, such effects can threaten the very existence of many natural communities in the units.

The principal functions of the I&M Program are the gathering of information about the resources and the development of techniques for monitoring the ecological communities in the National Park System. Ultimately, the inventory and monitoring of natural resources will become integral parts of park planning, operation and maintenance, visitor protection, and interpretation. They will enhance the preservation and protection of natural resources and improve the stewardship of natural resources by the National Park Service. The detection of changes and the quantification of trends in the conditions of natural resources are imperative for the identification of links between changes in resource conditions and the causes of changes and for the elimination or mitigation of such causes. Inventory and monitoring provide important feedback between natural resource conditions and management and trigger specific management and evaluation of managerial effectiveness.

<sup>1</sup> National parks and other entities of the National Park Service such as national monuments, national rivers, wild and scenic riverways, national scenic trails, and others are called *units* and collectively constitute the *National Park System*.

A basic requirement of documentation is comprehensive geologic mapping.

**Geologic Mapping**

Maps of selected geophysical features, including bedrock and surficial geology, are included in the baseline inventory of natural resources for each park. Ultimately, geology maps will be provided for all natural resource NPS units.

**Partnerships**

The I&M Program is completing geology projects through national agreements with other federal agencies, most notably the US Geological Survey. In 1995, scientists of the survey assisted park managers with defining types of geologic mapping and scales for park management. Regional teams of the survey acquainted park personnel with the quality and availability of geologic mapping.

Through a partnership with the American Association of State Geologists, information is gathered from the files of state agencies and compiled into an automated ProCite database of geologic maps, documents, specimen collections, and other related information.

**Program Status**

Because field mapping of geologic features is extremely costly, efforts have focused on first obtaining data from other sources. Database searches are completed in all three regions of the US Geological Survey. Data files were downloaded from GEOINDEX and GEOREF databases and converted into a format that can be uploaded into park-specific ProCite files. Data entry and data conversion were completed under an arrangement with the Cooperative Park Studies Unit at the Colorado State University.

ProCite databases developed by the American Association of State Geologists will be completed for all parks by December 1997. The project has compiled a total of 4,892 references from 46 states. The other four states either contained no National Park Service lands or had no references for those lands.

A workshop in November 1997 addressed several programmatic questions related to the geology component of the I&M Program. The workshop provided recommendations related to: (1) geologic information that should be included in Level I inventories for all parks, e.g., whether surficial/bedrock geology is needed for all parks and to what extent geo-hazards and geologic features should be mapped, (2) the evaluation of the quality and applicability of existing geologic information, and (3) value that can be added to geologic maps by interpreting the management implications of the data. The workshop participants also developed recommendations for map acquisition, digitizing existing maps, and exploring additional partnership opportunities.

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