



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



Vegetation Mapping

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The Natural Resource Inventory and Monitoring (I&M) Program was established to gather information and develop techniques for maintaining the integrity of the ecological communities in the approximately 250 National Park System units with significant natural resources. The details of the program are outlined in *Natural Resource Inventory and Monitoring in National Parks*, available from the address listed below.

Since its inception in 1992, the I&M Program has funded mapping of vegetation, soils, and geologic features; collection of base cartographic data; compilation of automated park-based bibliographic databases; initiation of several prototype monitoring programs; and development of data management standards and protocols. The series of fact sheets provides updated information on the progress in each of these areas.

Vegetation Mapping

Every park unit with significant natural resources will be provided with information on its vegetation. After development and testing of standards and protocols, hard-copy and digital vegetation maps will be generated. Aerial photography and remotely sensed imagery will also be acquired to support vegetation mapping, soil surveys, geologic mapping, and species inventories.

In cooperation with other agencies and the Federal Geographic Data Committee's Vegetation Subcommittee, the National Park Service is developing a uniform hierarchical vegetation classification standard. This national vegetation classification standard is based on a system originally developed by The Nature Conservancy through its

network of Natural Heritage Programs. To allow for adjustments and refinements, the classification system, field methodologies, and map accuracy assessment procedures are being tested in representative park units across the National Park System. Field data will be maintained in the park in which they were collected to ensure their availability to managers.

The primary product of the vegetation mapping is a digital vegetation layer. Digitizing of the vegetation data will provide flexibility in map design and production and will facilitate data management. Other products of the program include vegetation class descriptions and keys, hard copy maps, and field data analysis.

Program Status

Through a contract administered by the National Biological Service, standards and protocols for the classification system were developed in 1995. Progress has been made in developing field sampling methods and procedures for assessment of map accuracy. A completed inventory of existing data in 101 parks is providing the basis of planning for identifying the need for aerial photographs. The Inventory and



Monitoring Division of the National Park Service is locating and acquiring from other agencies aerial photographs that meet the requirements and standards of this project. When necessary, contracts will be established for obtaining new imagery. The park units will be mapped in priority order, based on identified needs for vegetation information and the availability of Digital Orthophoto Quarter Quads, which serve as the cartographic basis for the mapping.

The acquisition of photographs through interagency agreements with the U. S. Bureau of Land Management and the U. S. Forest Service is complete for the following park units: Arches National Park, Colorado National Monument, Canyonlands National Park, Capitol Reef National Park, Glen Canyon National Recreation Area, Natural Bridges National Monument, Bryce Canyon National Park, Rainbow Bridge National Monument, Great Sand Dunes National Monument, Bent's Old Fort National Historic Site, Florissant Fossil Beds National Monument, and Zion National Park. Reprints of photographs were obtained for the Devils Tower National Monument, Great Smoky Mountains National Park, Jewel Cave National Monument, and Mount Rushmore National Memorial. In 1995, photos were acquired under contract for the Fort Laramie National Historic Site (specific areas of interest to the park), Scotts Bluff National Monument, Agate Fossil Beds National Monument, and Tuzigoot National Monument. The acquisition of photographs for the Devils Tower National Monument, Glacier National Park, Rocky Mountain National Park, Sunset Crater Volcano National Monument, Congaree Swamp National Monument, Walnut Canyon National Monument, and Wupatki National

Monument and possibly for Theodore Roosevelt National Park is planned in 1996. The acquisition of photographs for Glacier Bay National Park and Preserve and Klondike Gold Rush National Historical Park through partnerships with the U. S. Forest Service, National Biological Service, and National Aeronautic and Space Agency in Alaska is also planned; additional imagery and maps will be acquired under contract.

Pilot Projects

To test the new classification system, field methodologies, and procedures for assessing map accuracy, pilot projects are being conducted in several parks. A summary of the accomplishment in each pilot project is as follows.

Assateague Island National Seashore

Existing aerial photographs (1:12,000) were used on Assateague Island. Field sampling in 114 plots in summer 1995 indicated 25 vegetation types. Photo interpretation was also completed and provided more detail than the cover classes. The classification, vegetation type descriptions, and field key for the Assateague Island National Seashore were delivered to the National Park Service by the contractor.

Tuzigoot National Monument

New aerial photography (1:6,000) was completed in fall 1995. Analysis of field sampling in 35 plots indicated 19 vegetation types. Photo interpretation and automation were completed. The classification, vegetation type descriptions, and field key were delivered and are in review.

Scotts Bluff National Monument

New aerial photography (1:12,000) and field sampling were completed at the monument in 1995. Analysis of the vegetation in 100 plots indicated 18 vegetation types. Sampling accuracy was assessed at 150 sites. The

classification, vegetation type descriptions, and field key were delivered.

Great Smoky Mountains National Park

Existing aerial photography will be used for the initial sampling in the park. Existing aerial photography and related data to conduct the pilot in the park were reviewed in 1995 and will be the foundation of planning the field sampling.

Activities in 1996

Priorities for the upcoming field season include:

- continued acquisition of aerial photos for priority parks
- continued field testing of procedures and methods
- review of products from pilot projects.

Field sampling, photo interpretation, vegetation description, and data automation are planned for additional pilot projects in Acadia, Joshua Tree, Yosemite, and Voyageurs national parks and in the Congaree Swamp National Monument. Others will be initiated when funding is available.

Training Opportunity

The National Biological Service contracted The Nature Conservancy to conduct a workshop on the standardized national vegetation classification system. The initial class will be held for National Park Service personnel but will probably include representatives from the U. S. Bureau of Land Management, Bureau of Reclamation, Department of Defense, Environmental Protection Agency, U. S. Fish and Wildlife Service, U. S. Geological Survey, and National Biological Service. The purpose of the class is to explain the classification system; discuss the data that are necessary to use the system; describe

methods for acquiring from other agencies aerial photographs for sampling and analysis of data; conduct field exercises in gathering data, analyzing results, and producing keys and other products.

For further information, contact:

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You may also consult our worldwide web page on vegetation mapping at <http://www.aqd.nps.gov/nrid/im/bvegmap1.htm>