

Introduction

In 1989, a task force was established by the Associate Director, Natural Resources and charged with developing a workable plan for implementing inventory and monitoring on a programmatic basis in the National Park Service.

The task force used as its starting point the program strategy laid out in the 1987 "Evison Report." The program development effort built on that report and relied heavily on experience gained by parks that have initiated monitoring programs. In particular, the inventory and monitoring methodology developed by the Western Region, based on its parks' experiences, was determined to be widely applicable and its approach adapted for programmatic use.

The task force developed a staged program that takes into account the need to constrain costs as much as possible and to increase Park Service capability in manageable steps.

The program plan which follows was developed between December 1989 and March 1990 by the task force consisting of the following personnel:

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David Graber, Research Scientist, Sequoia-Kings National Park
Albert Greene, Jr., Deputy Senior Scientist, WASO
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INVENTORY AND MONITORING PROGRAM

PROGRAM GOAL

The NPS policy with respect to inventory and monitoring is enunciated in its Management Policies (4:4):

The National Park Service will assemble baseline inventory data describing the natural resources under its stewardship and will monitor those resources at regular intervals to detect or predict changes. The resulting information will be analyzed to detect changes that may require intervention and to provide reference points for comparison with other, more altered environments.

Inventories have three major purposes:

- Providing basic information immediately useful in the parks for making resource management decisions and for identifying additional research needs;
- Providing data that can be aggregated on a Servicewide level to manage programs and to communicate information about the National Park System; and
- Providing data necessary to design monitoring systems.

Monitoring--which results in knowledge of the condition of park resources--is a fundamental natural resource management activity. It is essential to fulfilling the NPS mission of conserving resources unimpaired for future generations.

To implement the above policy, the Inventory and Monitoring Program has as its long-term goal the development of monitoring programs in all parks with significant natural resources.

PROGRAM OBJECTIVES

Monitoring programs must be based on adequate natural resource inventory data. They must also be designed on a park-specific basis, taking into account differing park ecosystems and the issues that are unique to each park. The National Park Service is not, at present, in a position to initiate a Servicewide program of monitoring because adequate inventory data are lacking and natural system models for most parks have not been developed.

Appropriate inventory and monitoring objectives at this time are to develop adequate inventory information and the expertise to design monitoring programs efficiently in the future. To meet these, a systematic approach to inventorying and a pilot monitoring program are proposed.

In the first 10 years, the Servicewide Inventory and Monitoring Program will complete basic natural resources inventories for the

System, implement comprehensive monitoring programs in a selected sample of "pilot parks," and design monitoring programs for a portion of the parks. The products of this monitoring will support annual resources management planning and "State of the Park Ecosystem" reports.

In designing its program, the Park Service has adapted the park inventory and monitoring design methodology developed by the Western Region.

NATURAL RESOURCES INVENTORIES

1. Two hundred and twenty-five national park units have natural resources that require separate natural resource components in resource management plans or are otherwise considered "significant" from a management point of view 1/. In FY90, the regions will assess and document the extent and quality of existing inventory data in these parks. 2/

2. From FY91-95, expert panels will evaluate the FY 1990 inventory assessments, recommend the additional data needed for an adequate inventory, describe the structure and function of the parks' ecosystems (conceptual models), and set system boundaries.

Boundaries are "spheres of influence:" the geographic limits of different resource classes upon the parks. Resource management plans will be revised as necessary based on the definition of system boundaries and inventory needs assessments.

Parks with the most complete inventories will be scheduled first, so they can serve as models. Parks with the most poorly developed resources inventories will be scheduled next. These parks will need the longest time to complete inventories and their early scheduling will provide managers with urgently needed data. Within each category, timing of inventories will be based on a balance of biogeographic area and park size to provide a representation of the National Park System at the earliest possible date.

The expert panels will be composed of park or regional scientists, managers, CPSU scientists, or outside experts. Exclusive of additional inventories, this will cost approximately \$100,000 to 740,000 per year for 5 years. The schedule allows for gradually increasing numbers of parks evaluated per year to allow experience in the first evaluations to be applied to subsequent evaluations. At least the first 2 year os this phase can be completed largely with existing funding.

3. Beginning in FY92 and continuing through FY99, based on the recommendations of the panels, resources inventories for the 225 parks will be completed. Including regional coordination and support costs, these inventories are preliminarily estimated to cost between FY 1992 and FY 1999--\$1.2 million in FY 1992, peaking at about \$16 million in FY 1996. Only a very limited amount of existing funding is available for these inventories.

ECOSYSTEM MONITORING

1. In FY 1990, prototype "State of the Park Ecosystem" reports will be produced for 3 parks. These reports will communicate the state of park resource conditions and health to the public, other agencies, and the Service directorate, based on available data. They will also demonstrate Service accountability for knowing the condition and health of park natural resources; this is requisite for sound stewardship. Finally, the reports will describe resource prognoses and management actions anticipated to address critical resource issues.

When monitoring programs are implemented, State of the Park Ecosystem reports will be produced annually and integrated into Resources Management Plans. The prototypes are funded with existing funds.

2. From FY92-95, 2 pilot park monitoring programs will be implemented each year for a full complement of 8 permanent, operational programs. The use of pilot parks will constrain the costs of developing operational monitoring for the Service. To minimize costs and to expedite results, parks where inventory and monitoring design work is most advanced will be selected. However, to assure maximum applicability of experience gained from the pilot programs, a range of biogeographic areas and park sizes will be represented. At least one cluster of smaller parks will be selected as a monitoring unit.

In all, 27 potential pilot parks have been identified. The 8 pilots will be selected in FY 1991, after completion of inventory assessment, preparation of detailed proposals, and completion of conceptual ecosystem models. They will be implemented, two parks (or clusters) per year, beginning in FY 1992. Each participating park will be required to produce State of the Park Reports.

The 8 permanent pilot monitoring programs will require \$1.5 million in FY 1992, increasing to \$8.9 million in FY 2000. Additional costs of \$600,000 per year for 4 years will be required for infrastructure to support this significant expansion of park resources programs.

3. Beginning in FY 1995, monitoring designs for an additional 20% of the parks will be developed, utilizing experience gained in the first years of the pilot monitoring programs. This will require an estimated additional \$3 to \$3.8 million per year. Allowing for completion of additional inventories, this phase will begin in FY 1995.

An additional \$450,000 annually will provide Servicewide and regional direction, coordination, and assistance.

DATA MANAGEMENT

A programmatic effort to develop inventory and monitoring data will develop large amounts of new data. Adequate, integrated data management systems are not available in the Park Service for fully utilizing these data. Enhancement of GISs (a first step is included as part of the President's FY 1991 budget and a second step proposed for FY 1992) will meet some data management needs, but additional systems need to be designed.

Since the primary purpose of the inventory data and the monitoring efforts is to serve park needs, it is important that data be managed at the park level--or at a cluster or regional level for very small parks. Development of a distributed data base for integrating the parks' data is needed, i.e., a data management system in which individual park data can be aggregated into a systemwide data base that is easily accessible. However, design of such a system requires data definitions that cannot be undertaken until individual park ecosystem components and elements to be monitored are identified. This information will not be available until monitoring designs for the pilot programs are substantially completed. **It is proposed that design of a distributed data base be initiated in FY 1993.** It is anticipated that this will take 2 years. However, **no estimate of the costs of designing and implementing such a data base management system is included in the current estimates for this program.** Data management needs for pilot monitoring parks are included in operational funding estimates.

FUTURE NEEDS

It is also recognized that actual budget enactments, as well as experience, will require periodic reevaluation of the proposed program.

FOOTNOTES

1/ Significant natural resources are defined generally as those for which a natural resource was identified as a primary park resources in legislation establishing the unit and/or otherwise justifying the development of a natural resource management plan. These may be "cultural resource parks" which, nonetheless, have extensive natural resources or natural resource management issues.

2/ The form for developing this inventory is attached.