

OVERVIEW OF THE NATIONAL PARK SERVICE AND SOIL CONSERVATION SERVICE PLANT MATERIALS PROGRAM¹

by

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Abstract. Preservation of native plants within their natural ecosystem is a high priority in the National Park Service. The national parks recognize that historical and cultural landscapes are important and worth protecting. Damaged vegetation in meadows, on lakeshores, along road sites, in campsites, and on construction sites needs restoration. The National Park Service and Soil Conservation Service's plant materials centers are cooperating in the development of park-indigenous plants for revegetation. Many plant materials projects are currently active: Yellowstone, Glacier, Grand Teton, Yosemite, Big Bend, Great Smoky Mountains, Mount Rainier, Bryce Canyon, Grand Canyon, and Mesa Verde national parks, Chickasaw National Recreation Area, Natchez Trace Parkway, and Cumberland Gap National Historical Park. The pilot phase of this plant materials revegetation program has predominately been under the Federal Lands Highway Program administered by the National Park Service, Denver Service Center. An estimated 150-160 new park-indigenous ecotypes have been collected. These native species are now in the process of testing or reproduction for use on park roads and other disturbed sites.

Introduction

The national park system of the United States comprises 356 areas and covers almost 80 million acres in 49 states, the District of Columbia, American Samoa, Guam, Puerto Rico, Saipan, and the Virgin Islands. These areas are of such national significance as to be afforded protection by various acts of Congress.

After the establishment of Yellowstone National Park on March 18, 1872, a movement began that has resulted in the preservation of natural, cultural, and historical resources for public enjoyment. The diversity of the national park system is reflected in the variety of park unit titles. These titles are usually descriptive – seashore, lakeshore, historic site, battlefield, and recreation area, for example. The designations have not always been used consistently, but they reflect certain precedents that have been followed by Congress and different management policies. The parks have

traditionally been reserved for unique, spectacular natural areas with a wide variety of features.

All these areas are managed by the National Park Service in accordance with specific legislative mandates set forth by Congress. Key management requirements for all park units are that they must provide for the public use in such a way that will leave their resources "unimpaired for the enjoyment of future generations." Achieving this management objective of preserving resources while providing for public enjoyment is a delicate balancing act for the park administrator. Revegetation and reclamation activities present special problems when trying to maintain native plant populations in areas impacted by visitor facilities. When preserving natural resources, NPS policy seeks to perpetuate native plant life as part of the natural ecosystems. To the extent possible, plantings in park units consist of species that are native to the park or that are historically appropriate for the event commemorated.

Cooperative Program

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Toward this end, a cooperative agreement between the National Park Service and the Soil Conservation Service was developed in 1989. This cooperative plant materials program seeks to draw upon the strengths of the 2 federal agencies in the development, testing, and establishment of native species for disturbed sites within national park system units.

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Initially, the plant materials program between the 2 agencies focused on development of native plants for the revegetation of areas disturbed by road construction. With monies allocated by the National Highway Trust Fund, the National Park Service plans to construct or repair approximately 200 of the 4,800 miles of roads in the park system. The park roads program is the ideal starting point for the plant materials program. Because advanced scheduling and funding appropriations are critical to the timely success of the plant materials program, the park roads program ensures that all plant materials projects will be adequately funded and that sufficient lead time will be available to meet schedules.

A diversity of native plants will be needed, ranging from cool- to warm-season grasses, shrubs to half-shrubs, or trees from the Pacific Northwest forests to trees from the Deep South. Basic information about the development and growth habits of these plants is currently lacking. Specialized vegetation and techniques required are not always available.

Soil Conservation Service Plant Materials Centers

The Soil Conservation Service has established 26 plant materials centers (PMCs) throughout the United States to develop plants and technology. Through networking, these centers accomplish national and local objectives. The PMCs are located to provide service to a given ecological region.

Each center has facilities and specialized equipment to handle various native seed and plant operations needed in plant propagation and testing. The centers cooperate and use expertise developed by the Agricultural Research Service, the U.S. Forest Service, state experiment stations, and other research institutions. The SCS plant materials program is also unique in its working relationship with seed growers and the commercial seed industry across the United States.

Park Projects

Prior to March 14, 1989, when the Soil Conservation Service and the National Park Service formally signed a memorandum of understanding, 4 PMCs were conducting plant materials work with specific parks.

In 1986, Yellowstone National Park had a 4-year agreement with the Bridger, Montana, PMC to collect, test, and develop plant materials for various road reclamation projects. In 1987, the Bridger PMC was also working with Glacier National Park in the development of plant materials.

The Corvallis, Oregon, PMC started work with Olympic National Park in 1987, and the Meeker, Colorado, and Lockeford, California, centers initiated

long-term agreements with Grand Teton and Yosemite national parks, respectively, in 1988.

To date, the cooperative plant materials projects have focused on road-related revegetation work. Fifteen agreements have been developed under the pilot program. Most of these projects represent relatively small acreage, from 10 to 120 acres; however, the technology and plant materials can be applied to adjacent areas.

Nine new cooperative agreements were completed in fiscal year 1990 (see table 1). These agreements include working with 140 additional native plant species at 7 PMCs.

Eight new plant materials agreements are scheduled for fiscal year 1991 (see table 2).

Program Activities

The NPS plant materials program can generally be grouped into the following 4 main activities:

- Seeds are collected within the parks to preserve the unique characteristics of the original plant genetic diversity.
- Seeds and plants are grown and reproduced at centers that have approximately the same climatic conditions.
- New technology is often needed to reproduce and grow these plants; new techniques are also tested to successfully establish new species.
- Quality seeds of known genetics and the needed technology for establishment are returned to the park for use by resource managers.

In most parks, it is extremely important that native plant materials appropriate to an area be used for restoration work. If possible, it is desirable to restore the vegetation that was present before disturbance. Where disturbance is severe, restoration may have to begin at a lower successional stage and pioneer species may have to be considered.

Restoration Options

Some of the options park managers use to restore a site with native species are as follows:

- Topsoiling: grade back a thin layer of topsoil with seed and duff, then respread over disturbed area after construction is completed.
- Collecting on site: collect the seed and/or plants on or near the site to be disturbed, then replant on site after disturbance.

Table 1. Plant Materials Agreements Established – FY 1990

Park		SCS Plant Center		Years	No. of Species
Bryce Canyon	UT	Meeker,	CO	1990-96	9
Chickasaw	OK	Knox City,	TX	1990-95	10
Cumberland Gap	KY	Beltsville,	MD	1990-95	34
Grand Canyon	AZ	Los Lunas,	NM	1990-94	15
Great Smoky Mtns.	TN	Quicksand,	KY	1990-94	18
Mesa Verde	CO	Meeker,	CO	1990-95	17
Mount Rainier	WA	Corvallis,	OR	1990-95	14
Natchez Trace	MS	Coffeeville,	MS	1990-94	15
Wupatki	AZ	Los Lunas,	NM	1990-93	6
				Total	140

Table 2. Plant Materials Agreements Scheduled – FY 1991

Park	SCS Plant Center		
Agate Fossil Beds	NE	Manhattan,	KS
Assateague Island	MD	Cape May,	NJ
Cumberland Gap	KY	Beltsville,	MD
Gateway NY		Cape May,	NJ
Grand Teton	WY	Meeker,	CO
Lake Mead	NV	Tucson,	AZ
Lake Meredith	TX	Knox City,	TX
Mount Rainier	WA	Corvallis,	OR

- Reproducing indigenous plants: seeds of indigenous plants are collected, and plants or seeds are reproduced. The seed, 1 generation from original stock, is returned to the park for revegetation purposes.
- Collect ecotypes from within a similar elevation range. (Common elevational ranges for collecting may vary from 600 to 1,200 ft.)

Summary

Genetic Integrity

It is proposed by some that preservation of genetic integrity (genetic resources) is the preservation of not only the full range of genotypes, but also the natural proportions of and the natural interactions between genotypes. The interpretation and practical application of this policy can be very difficult.

Pollination methods, seed dispersal, and plant longevity affect the common gene pool of a species. In working with parks, the following general guidelines are suggested for seed collection where specific species information is not available:

- Collect ecotypes having approximately the same flowering time.
- Collect where site conditions are similar and ecotypes are not isolated by geographic or vegetative features.

There are several positive spin-offs from this program. Some of the materials being tested and developed will have application to areas outside of park lands, and the technology for establishment has been refined. For example, we are working on long-term storage of flowering dogwood seed for preservation from anthracnose fungal disease, and new methods for germinating oniongrass (*Melica bulbosa*) and low sage (*Artemisia arbuscula*) are being tested. Also, new quantitative data on seed yields is being recorded on additional species. However, one of the biggest benefits of the program is the interchange of new ideas and technology between agencies.

The plant materials program and information generated over the coming years will add to the base information and help develop park-indigenous species that are locally adaptive. This program will help provide successful techniques for reestablishing native species in the national park system.

