

**National Park Service Plant Materials
Year 2002 Annual Report**

Prepared by

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Table Of Contents

	Page
Grand Canyon National Park	
Background	4
Accessions Involved	4
Collection Involved	5
Seed Condition Information	5
Seed Production Establishment	5
Seed Production	5
Field Management	5
Seed Produced	6
Transplant Production	6
Specialized Treatments	7
Observations	7
Petrified Forest National Park	
Background	8
Accessions Involved	8
Collection Involved	8
Seed Condition Information	8
Seed Production Establishment	8
Seed Production	9
Transplant Production	9
Specialized Treatments	9
Observations	9

Zion National Park

Background	10
Accessions Involved	10
Collection Involved	10
Seed Condition Information	10
Seed Production Establishment	10
Seed Production	10
Transplant Production	11
Specialized Treatments	11
Observations	11
 Climatological Data	 12

Grand Canyon National Park

Background

In July 1990, an agreement was established between the Grand Canyon National Park (GCNP) of the U.S. Department of Interior and the Natural Resources Conservation Service (NRCS) New Mexico Plant Materials Center (NMPMC) in Los Lunas, New Mexico, for the collection, propagation, and increase of grasses, forbs, shrubs, and trees.

The NMPMC will produce the plant material for revegetating disturbed sites and for native landscaping projects in the park. This agreement covers both the north and south rim areas of the park.

Accessions Involved

Table 1 lists the accessions involved in the GCNP 2002 project.

Table 1: Accessions Involved

Common Name	Scientific Name	Plant Symbol	Accession Number	Vegetation Association
Indian Ricegrass	<i>Oryzopsis hymenoides</i>	ORHY	9062857	122.3233
Squirreltail	<i>Sitanion hystrix</i>	SIHY	9062858	122.3233
Needle and thread	<i>Stipa comata</i>	STCO	9062859	122.3233
Western wheatgrass	<i>Agropyron smithii</i>	AGSM	9062860	122.3233
Muttongrass	<i>Poa fendleriana</i>	POFE	9062861	122.3233
Penstemon (blue)	<i>Penstemon spp.</i>	PE SPP.	9062862	122.3233
Penstemon (red)	<i>Penstemon spp.</i>	PE SPP.	9066054	122.3233
Lupine	<i>Lupinus spp.</i>	LU SPP.	9062863	122.3233
Apacheplume	<i>Fallugia paradoxa</i>	FAPA	9062865	122.3233
Fernbush	<i>Chamaebatiaria millifolium</i>	CHMI	9062866	122.3233
Curl-leaf mountain mahogany	<i>Cercocarpus ledifolius</i>	CELE	9062867	122.3233
Elderberry	<i>Sambucus spp.</i>	SA SPP.	9066047	122.3233
Utah serviceberry	<i>Amelanchier utahensis</i>	AMUT	9062869	122.3233
Wolfberry	<i>Lycium spp.</i>	LY SPP.	9062870	122.3233
Gambels oak	<i>Quercus gambelii</i>	QUGA	9062872	122.3233
Fourwing saltbush	<i>Atriplex canescens</i>	ATCA	9062873	122.4149
Century plant	<i>Agave utahensis</i>	AGUT	9062874	122.4149
Blue grama	<i>Bouteloua gracilis</i>	BOGR	9062875	122.4149
Rabbitbrush	<i>Chrysothamnus nauseosus</i>	CHNA	9062877	122.4149
Cliffrose	<i>Purshia mexicana</i>	COME	9062876	122.4149
Utah juniper	<i>Juniperus osteosperma</i>	JUOS	9066055	122.3233
Pinon pine	<i>Pinus edulis</i>	PIED	9066467	122.3233
Ponderosa pine	<i>Pinus ponderosa</i>	PIPO	9066466	122.3233
Big sagebrush	<i>Artemisia tridentata</i>	ARTR	9066056	122.3233
Currant	<i>Ribes spp.</i>	RI SPP.	9066057	122.3233
Datil yucca	<i>Yucca baccata</i>	YUBA	9066058	122.3233
Desert barberry	<i>Berberis fremonti</i>	BEFE	9066059	122.3233

Collection Information

There were no collections in 2002.

Seed Condition Information

See previous Grand Canyon Park reports for information.

Seed Production Establishment

In October 2002, the NMPMC established one half acre of Muttongrass. Using a mechanical transplanter, transplants grown by the NMPMC were planted into Field 20.

Seed Production

See the section *Climatological Data* for the 2002 climatological data at the NMPMC in Los Lunas, New Mexico.

Field Management

9062861 Muttongrass	Field 20 1.0 Acre	Date
Fertilization Broadcast spreader		
100 lbs. Nitrogen		2/27, 8/7
100 lbs. Phosphorous		2/27, 8/7
Irrigation		
3" water application		3/6, 3/20, 4/2, 4/19, 5/3, 5/17, 6/7, 6/20, 7/2, 8/1, 8/15, 9/6, 10/10, 10/21, 11/19
Herbicide Application		
Pendulum Preemergent		5/15, 10/10
Insecticide Application		
Orthene @ 1.33 pounds per Acre		8/29
Cultural Weed Control		
Hand Hoeing		4/19, 6/6
Mechanical Cultivation		4/16, 5/8, 6/6, 7/12, 7/23, 8/29, 10/1
Harvest		
Forage Harvester		5/6
9062875 Blue Grama	Field 20 0.5 Acre	Date
Fertilization Broadcast spreader		
100 lbs. Nitrogen		5/14, 8/7
100 lbs. Phosphorous		5/14, 8/7
Irrigation		
3" water application		5/17, 6/7, 7/2, 7/29, 8/13, 9/6
Herbicide Application		
2,4-D @ 1.5 quart per Acre		2/11, 6/18
Pendulum Preemergent		5/15, 10/10

9062861 Muttongrass	Field 20 1.0 Acre	Date
Insecticide		
Orthene @ 1.33 pounds per Acre		6/18, 7/2, 7/23, 8/29
Cultural Weed Control		
Hand Hoeing		6/15
Mechanical Cultivation		5/14, 6/6, 7/22
Harvest		
Combine		9/6

Seed Produced

Table 2 describes the seed production for the year 2002.

Table 2: 2002 Seed Production

Common Name	Scientific Name	PLS Pounds
Blue Grama	<i>Bouteloua gracilis</i>	5.03
Muttongrass	<i>Poa fendleriana</i>	5.68

Transplant Production

Table 3 describes the transplant production and delivery for the GCNP for year 2002.

Table 3: 2002 Transplant Production

Common Name	Treepots Delivered			
	North Rim Point Imperial	North Rim Developed Area	South Rim	Total
Mexican Cliffrose		3	219	222
Fernbush			32	32
Apache plume			396	396
Big Sagebrush			34	34
Pinon Pine			24	24
Ponderosa Pine			229	229
Currant		26	215	241
Curl-leaf Mountain Mahogany	332	204	79	615
Mormon Tea			138	138
Mountain Snowberry	46	144	159	349
Utah Serviceberry		100	269	369
NM Locust	25	22		47
Datil Yucca			24	24
Century Plant			114	114
Black Sage			101	101
Barberry spp.		69	324	393

Table 3: 2002 Transplant Production

Common Name	Treepots Delivered			
	North Rim Point Imperial	North Rim Developed Area	South Rim	Total
Rubber Rabbitbrush			80	80
Woods Rose	70			70
Total				3478

Specialized Treatments

See previous Grand Canyon National Park reports for information on specialized treatments.

Observations

The Blue Grama and Muttongrass fields had vigorous growth during the 2002 growing season. The production of a good, viable seed crop from these fields continues to be the goal of the NMPMC. Both fields received irrigation and fertilization to maintain healthy and vigorous growth. The application of pepper wax to control rabbit damage does succeed in keeping the Muttongrass plants vigorous and healthy early in the growing season. Irrigation applications for the muttongrass were increased during the growing season to evaluate the effect of more moisture on seed production.

The NMPMC will continue to spray pesticides in 2003 to control any insects that could be lowering the amount of seed fill. Fertilization using Nitrogen and Phosphorous will continue in 2003 along with the application of trace elements to help maintain optimum growing conditions for seed production.

Petrified Forest National Park

Background

On November 14, 2000, an agreement to propagate plants was made between the National Park Service, Petrified Forest National Park (PFNP) of the U.S. Department of Interior, and the Natural Resources Conservation Service (NRCS) New Mexico Plant Materials Center (NMPMC) in Los Lunas, New Mexico.

The PFNP will use the plant materials produced by the NMPMC to revegetate disturbed areas located on the park. Seed will be collected from the park and sent to the NMPMC for conditioning. The seed will be used to propagate the plant materials (shrubs and forbs) necessary to complete the agreement.

Accessions Involved

Table lists the accessions involved in the 2002 PFNP project.

Table 1: Accessions Involved

Common Name	Scientific Name	Plant Symbol	Accession Number
Fourwing saltbush	<i>Atriplex canescens</i>	ATCA2	9066487
Goldenweed	<i>Haplopappus</i> spp.	HA spp.	9066488
Sand sagebrush	<i>Artemisia filifolia</i>	ARFI2	9066489
Globe-mallow	<i>Sphaeralcea ambigua</i>	SPAM2.	9066490

Collection Information

No seed was collected in 2002.

Seed Condition Information

See previous Petrified National Forest reports for seed condition information.

Seed Production Establishment

The seed production process is not a part of this agreement.

Seed Production

See the section *Climatological Data* for the 2002 climatological data at the NMPMC in Los Lunas, New Mexico.

Transplant Production

Table 2 describes the transplant production and delivery for the PFNP for the year 2002.

Table 2: 2002 Transplant Production

Common Name	Transplant Delivery
Sand sagebrush	156
Fourwing saltbush	156
Globemallow	84
Goldenweed	321
Total	717

Specialized Treatments

None to be reported for the 2002 transplants at this time.

Observations

All plants were maintained through the dormant season and were ready for shipment to the PFNP as per agreement.

Zion National Park

Background

On September 12, 2002, an agreement to produce seed was made between the National Park Service, Zion National Park (ZNP) of the U.S. Department of Interior, and the Natural Resources Conservation Service (NRCS) New Mexico.

The park will use the plant materials produced by the NMPMC to revegetate disturbed areas located on the park. Seed will be collected from the park and sent to the NMPMC for conditioning. The seed will be used to plant increase production fields to complete the agreement.

Accessions Involved

Table 1 lists the accessions involved in the ZNP 2002 project.

Table 1: Accessions Involved

Common Name	Scientific Name	Plant Symbol	Accession Number
Sand dropseed	<i>Sporobolus cryptandrus</i>	SPCR	9066527
Indian Ricegrass	<i>Acnatherum hymenoides</i>	ACHY	9066528
Big Bluestem	<i>Andropogon gerardii</i>	ANGE	9066529
Blue Grama	<i>Bouteloua gracilis</i>	BOGR	9066530
Muttongrass	<i>Poa fendleriana</i>	POFE	9066531
Bottlebrush squirreltail	<i>Elymus elymoides</i>	ELEL5	9066532

Collection Information

Seed of the species in the agreement was collected by ZNP employees and sent to the NMPMC for conditioning in 2002. The drought conditions at the ZNP in 2002 made seed collection very difficult.

Seed Condition Information

The seed condition appeared to be poor to fair after cleaning.

Seed Production Establishment

No seed production fields were established in 2002.

Seed Production

See the section *Climatological Data* for 2002 climatological data at the NMPMC in Los Lunas, New Mexico. No seed production in 2002.

Transplant Production

Transplants are not part of this agreement.

Specialized Treatments

Indian Ricegrass seed has been imbibed, sown in plug trays, and placed in cold stratification (40°F) for 10 weeks. Plug trays will be removed from cold stratification in mid January 2003.

Observations

Seed of the Big Bluestem and Sand dropseed that was collected by ZNP employees exhibited poor germination during tests conducted in July 2003. All seed collected will be properly stored to assure sufficient after-ripening has occurred prior to any attempts at seed germination in 2003. Seed production fields will be established using plugs seedlings in the spring and summer of 2003.

Climatological Data

The following table shows the climatological data for the year 2002 at the New Mexico Plant Materials Center.

2002 Climatological Data–New Mexico Plant Materials Center

Month	Average Temperatures Fahrenheit			Monthly Precipitation/Inches
	High	Low	Monthly Average	
January	52.7	18.4	35.55	0.49
February	56.6	16.8	36.70	0.05
March	67.6	23.3	45.45	0.00
April	81.0	31.3	56.15	0.13
May	85.6	45.4	65.50	0.19
June	96.6	56.0	76.30	0.08
July	94.7	59.9	77.30	1.35
August	94.8	56.6	75.70	0.62
September	84.7	50.8	67.75	3.05
October	73.3	36.4	54.85	0.76
November	60.6	24.9	42.75	0.60
December	50.5	19.8	35.15	0.52
	Avg. High 74.90	Avg. Low 36.63	Mean Temp. 55.76	Yearly Total 7.84