

**National Park Service Plant Materials  
Year 2001 Annual Report**

**Prepared by**

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## Chapter 1 Grand Canyon National Park

### I. 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.

### II. Accessions Involved

Table 1-1 lists the accessions involved in the GCNP Year 2001 project.

**Table 1-1: 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

### III. Collection Information

There were no collections in 2001.

#### IV. Seed Condition Information

See previous Grand Canyon Park reports for information.

#### V. Seed Production Establishment

No seed fields established in 2001.

#### VI. Seed Production

See Appendix A for the climatological data for Year 2001 at the NMPMC in Los Lunas, New Mexico.

##### A. Field Management

<b>9062875 Blue Grama</b>	<b>Field 20 0.5 Acre</b>	<b>Date</b>
Field Ripped to 12" depth		12/10
Fertilization Broadcast spreader		
100 lbs. Nitrogen		3/26, 5/9, 5/14, 6/26, 8/15
100 lbs. Phosphorous		3/26, 5/9, 5/14, 6/26, 8/15
Irrigation		
3" water application		5/3, 6/4, 6/29, 7/30, 8/23
Herbicide Application		
2,4-D @ 1.5 quart per Acre		7/30
Insecticide Application		
Orthene @ 1.33 pounds per Acre		6/22
Lannate @ 7 pints per Acre		6/26, 7/19, 7/31
Cultural Weed Control		
Hand Hoeing		4/24, 6/26
Mechanical Cultivation		5/17, 8/6
Harvest		
Combine		10/16
<b>9062861 Muttongrass</b>	<b>Field 20 0.5 Acre</b>	<b>Date</b>
Fertilization Broadcast spreader		
100 lbs. Nitrogen		3/15, 3/27, 5/9, 5/14, 6/26, 8/15
100 lbs. Phosphorous		3/15, 3/27, 5/9, 5/14, 6/26, 8/15
Irrigation		
3" water application		3/29, 4/11, 4/23, 5/3, 5/15, 6/4, 6/29, 7/30, 8/23, 9/24, 10/23
Herbicide Application		
2,4-D @ 1.5 quart per Acre		7/30
Repellant		
Hot Pepper Wax		3/2
Insecticide		
Orthene @ 1.33 pounds per Acre		6/22
Lannate @ 7 pints per Acre		6/26, 7/19, 7/31
Cultural Weed Control		
Hand Hoeing		4/19, 4/23-24, 5/16-17
Mechanical Cultivation		3/15, 5/9, 5/31-6/1, 6/26, 8/15

9062861 Muttongrass

Field 20 0.5 Acre

Date

Harvest

No harvest in 2001.

**B. Seed Produced**

There was no seed produced in 2001.

**VII. Transplant Production**

Table 1-2 describes the transplant production and delivery for the GCNP for year 2000.

**Table 1-2: Year 2001 Transplant Production**

<b>Common Name</b>	<b>Treepots delivered – Year 2001</b>
Mexican Cliffrose	126
Fernbush	348
Apache plume	211
Big Sagebrush	48
Gambel Oak	20
Utah Serviceberry	119
Desert Barberry	51
Curl-leaf Mountain Mahogany	20
Mormon Tea	89
Ponderosa Pine	50
Pinon Pine	674
Currant	53
Mountain Snowberry	214
NM Locust	64
Datil Yucca	261
Century Plant	198
Fourwing Saltbush	91
Elderberry	15
Black Sage	299
Utah Juniper	19
<b>Total</b>	<b>2970</b>

Table 1-3 lists the year 2001 plant inventory for the north and south rim of the GCNP.

**Table 1-3: Grand Canyon North and South Rim Plant Inventory as of December 2001**

Common Name	Containers								Future Delivery	Total
	Rim	D40 Spring 2002	1 Gallon Treepots Spring 2002	1 Gallon Treepots Fall 2002	D16 2"X7" Spring 2002	SC10 1.5"X8" Spring 2002	SC10 1.5"X8" Fall 2002	TB 3"X3"X9" Spring 2002		
Century plant	S		120							120
Century plant	S	20								20
Century plant	S				15					15
Utah serviceberry	S		420							420
Black sage	S					60				60
Big sagebrush	S					20				20
Fourwing saltbush	S			180						180
Fremont barberry	S		300	520						820
Fremont barberry	S							10		10
Curlleaf mahogany	S		100	180						280
Fernbush	S		40	70						110
Rabbitbrush	S		80							80
Cliffrose	S		150	150						300
Cliffrose	S					100	100			200
Mormon tea	S		100	120						220
Apache plume	S		380	300						680
Pinyon pine	S								20	20
Ponderosa pine	S		100	120						220
Wax currant	S		100	180						280
Currant species	S		60	70						130
New Mexico Locust	S		50	50						100
Snowberry	S		200	90						290
Banana yucca	S		30	30						60
Utah serviceberry	NDA			110						110
Creeping mahonia	NDA			70						70
Curlleaf mahogany	NDA			210						210
Cliffrose	NDA			10						10
Wax Currant	NDA			50						50
New Mexico Locust	NDA			50						50
Snowberry	NDA			90						90
Curlleaf mahogany	NPI			290						290
Arizona rose	NPI			80						80
Snowberry	NPI			40						40
S = South rim N = North rim										
DA = Developed Area PI = Point Imperial										

## VIII. Specialized Treatments

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

## IX. Observations

The Blue Grama and Muttongrass fields had vigorous growth during the 2001 growing season. The production of a good, viable seed crop from these fields continues to be the goal of the NMPMC. It usually takes two years to produce a good seed crop, and the seed will be harvested in 2002 from these two fields. Both fields received irrigation and fertilization to maintain healthy and vigorous growth. The application of pepper wax to control rabbit damage did succeed in keeping the plants vigorous and healthy early in the growing season. Application of the pepper wax repellent is scheduled for 2002.

The soil properties in the GCNP are quite different from the soil properties at the NMPMC. The draft soil survey report for the GCNP area shows a range in pH from 6.1 to 8.4 for the soils of the South Rim area of the canyon. The field containing the Muttongrass and Blue grama at the NMPMC has a pH of 7.78. The soil the two species were originally collected from at the park could affect their growth at the NMPMC. This difference in pH will require testing to determine what type of fertilization will work best in production of a seed crop. In 2002, the NMPMC will experiment with different types of fertilizers to compensate for these soil differences. The NMPMC will continue to spray pesticides in 2002 to control any insects that could be lowering the amount of seed fill.

## Chapter 2 Petrified Forest National Park

### X. Background

On November 14, 2000, an agreement to propagate plants was made between the National Park Service, Petrified Forest National Park 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 park will use the plant materials produced by the NMPMC to revegetate 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.

### XI. 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	066489
Globe-mallow	<i>Sphaeralcea ambigua</i>	SPAM2.	9066490

### XII. Collection Information

Seed of the species in the agreement was collected by the park and was sent to the NMPMC for conditioning in 2000.

### XIII. Seed Condition Information

The seed received from the park was cleaned by the NMPMC and stored for future use to propagate transplants. The seed condition appeared to be fair-to-good after cleaning.

### XIV. Seed Production Establishment

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

### XV. Seed Production

See Appendix A for the climatological data for Year 2001 at the NMPMC in Los Lunas, New Mexico.

### XVI. Transplant Production

Table 2-1 describes the transplant production and delivery for the PFP for year 2001.

**Table 2-1: Year 2001 Transplant Production**

Common Name	Inventory December 2001	
	One-Gallon Treepots	10 Cubic Inch Cones
Sand sagebrush	142	25
Fourwing saltbush	144	
Globemallow	84	
Goldenweed	90	340
<b>Total</b>	<b>460</b>	<b>365</b>



**XVII. Specialized Treatments**

None to be reported for the 2001 transplants at this time.

**XVIII. Observations**

All plants will be maintained throughout the dormant season. Transplants will be ready for shipment to the PFNP as planned.

## Appendix A Climatological Data

Table A-1 shows the climatological data for the year 2001 at the New Mexico Plant Materials Center.

<b>Table A-1: Climatological Data for Year 2001–New Mexico Plant Materials Center</b>				
<b>Month</b>	<b>Average Temperature Fahrenheit</b>			<b>Precipitation/Inches</b>
	<b>High</b>	<b>Low</b>	<b>Monthly</b>	
January	48.0	18.1	33.1	1.46
February	59.3	23.4	41.4	0.41
March	65.3	29.8	47.6	1.01
April	76.5	36.0	56.3	0.21
May	86.4	47.6	67.0	0.19
June	95.4	53.6	74.5	0.06
July	95.1	62.3	78.7	1.09
August	91.7	59.5	75.6	1.28
September	88.6	49.0	68.8	0.37
October	78.9	36.1	57.5	0.21
November	64.4	30.4	47.4	1.14
December	52.8	15.5	34.2	0.12
<b>Total</b>				<b>7.55</b>