

2004 ANNUAL REPORT
To the
NATIONAL PARK SERVICE
For
GREAT SMOKY MOUNTAINS NATIONAL PARK

USDA
Natural Resources Conservation Service
National Plant Materials Center
Beltsville, Maryland

March 2005

BACKGROUND

The current cooperative agreement between the Great Smoky Mountains National Park (GRSM) and the National Plant Materials Center (NPMC) was signed in May, 2000, for Fiscal Years 2001–2005. Approximately 300 lbs. of grass/forb seed, 30,000 grass/forb plugs, 4,200 bare root and 800 containerized trees and shrubs were to be supplied under the agreement for revegetation of approximately 2 acres yearly in the Foothills Parkway. Park staff will continue to collect seed (530 pounds over the course of the agreement) from within Park boundaries and ship it to the NPMC for conditioning, testing, storage and plug production. The NPMC will continue producing grass and wildflower seed in established fields for several species that are difficult to grow and will also continue to assist the Park in establishing and renovating seed production fields in Cades Cove.

In 1998 the Park, assisted by NPMC staff, began to establish seed increase fields for forbs and grasses in Cades Cove using plugs produced at the NPMC. This was done to address the delays in road and bridge construction on the FHP which have resulted in ongoing problems in finding planting sites for plant materials produced yearly by the NPMC under the agreement. The purpose of the increase fields is to guarantee that the native seed and plants will be available when needed for revegetation in the Foothills Parkway after the expiration of the interagency agreement with NRCS. Plans are for the Park to be able to handle the 2-acre per year revegetation efforts for the Foothills Parkway beyond 2005 through propagation of plugs in its own greenhouse and seed harvested from its increase fields. The Park hopes to be able to do its own seed cleaning also.

SUMMARY OF ACTIVITIES

Woody Plant Materials for Revegetation along the Foot Hills Parkway:

New plantings of woody materials have been discontinued at the NPMC because of delays and setbacks in Foothills Parkway construction that result in lack of planting sites for woody materials, and poor accessibility for maintenance. At the request of GRSM, the deficit (1,215 bare root and 138 container woody plants) were converted to an additional 9,319 herbaceous plugs for Cades Cove seed increase fields.

Autumn, 2005: all remaining woody plants will be delivered to the park. (See attached woody plant container inventory)

Herbaceous Plug Production:

In May, 2004 the NPMC delivered 10,050 herbaceous plugs to the park for planting in Cades Cove. This included the following species: *Andropogon glomeratus*, *Saccharum giganteum* and *Lespedeza capitata*. The total amount of plugs required by the 2001 – 2005 interagency agreement has been met.

Seed Production, Conditioning and Delivery: Seed Production, Conditioning and Delivery:

101 pounds, PLS, of seed (18 different species) were delivered to the park May 2004. Approximately 100 pounds of cleaned seed (3 different species) were harvested from the NPMC seed increase fields in 2004. NPMC staff has processed 51 pounds PLS of seed harvested from the Cades Cove seed increase fields. Approximately 470 pounds, PLS, of cleaned GRSM herbaceous and woody seed is presently stored at the NPMC. (See attached seed inventory)

MISCELLANEOUS

A surplus 1989 Norlake refrigeration unit, from the New Jersey Plant Materials Center, will be shipped down to the park this spring 2005. The refrigerator will greatly assist the park staff in their ability to store seed lots on site plus alleviate shipping costs of seed from the National Plant Materials Center to GRSM.

With the spring 2004 delivery, the NPMC has fulfilled all of its obligations for the current interagency contract.

2001 – 2005 Activities during NPMC/GRSM Interagency Agreement

	March, 2001	May, 2001	October, 2001	March, 2002	May, 2002	March, 2003	May, 2003	September, 2003	March, 2004	May, 2004	September, 2004	<u>Total</u>	<u>Agreement Quantities</u>
Bare Root Plants Delivered	750			1,645								2395	2395
Containers of Trees and Shrubs Delivered	156					577		393				1126	800
Herbaceous Plugs Delivered		1,450			16,600		12,490			10,050		40,590	40,000
lbs. (Bulk) of grass and forb seed cleaned and tested				212.4		350			345			907.4	530
lbs. (PLS) of grass and forb seed delivered		4.5	312			60				90.4	9.7	476.6	300

* At the request of the GRSM, woody plant production was discontinued due to the lack of need and 1479 trees and shrubs were replaced with an additional 10,000 plugs.

**Listing of species produced by the NRCS National Plant Materials Center
2001 – 2005 for the Great Smoky Mountains National Park**

Grasses

- | | |
|-----------------------------------|------------------------|
| 1. <i>Andropogon gerardi</i> | Big Bluestem |
| 2. <i>Andropogon glomeratus</i> | Bushy Bluestem |
| 3. <i>Andropogon virginicus</i> | Broomsedge |
| 4. <i>Danthonia compressa</i> | Mountain Oatgrass |
| 5. <i>Elymus virginicus</i> | Virginia Wildrye |
| 6. <i>Panicum anceps</i> | Panic Grass |
| 7. <i>Saccharum giganteum</i> | Giant Sugar Cane Grass |
| 8. <i>Schizachyrium scoparium</i> | Little Bluestem |
| 9. <i>Sorghastrum nutans</i> | Indiangrass |
| 10. <i>Tridens flavus</i> | Purpletop |

Forbs

- | | |
|------------------------------------|-----------------------------|
| 1. <i>Aster pillosus</i> | White Heath Aster |
| 2. <i>Aster species</i> | Aster |
| 3. <i>Chamaecrista fasciculata</i> | Partridge Pea |
| 4. <i>Eupatorium serotinum</i> | Late Flowering Thoroughwort |
| 5. <i>Helenium autumnale</i> | Yellow Sneezeweed |
| 6. <i>Helenium flexuosum</i> | Purple Sneezeweed |
| 7. <i>Juncus tenuis</i> | Pathrush |
| 8. <i>Lespedeza hirta</i> | Hairy Bush Clover |
| 9. <i>Lespedeza capitata</i> | Round Headed Bush Clover |
| 10. <i>Pityopsis graminifolia</i> | Grass Leaved Golden Aster |
| 11. <i>Pycnanthemum muticum</i> | Mountain Mint |
| 12. <i>Solidago canadensis</i> | Canadian Goldenrod |
| 13. <i>Solidago species</i> | Goldenrod |
| 14. <i>Veronia novaboracensis</i> | Ironweed |

Vines

- | | |
|---------------------------------------|------------------|
| 1. <i>Parthenocissus quinquefolia</i> | Virginia creeper |
| 2. <i>Vitis aestivalis</i> | Summer Grape |

Shrubs

- | | |
|--------------------------------------|-------------------|
| 1. <i>Gaylussaccia baccata</i> | Black Huckleberry |
| 2. <i>Kalmia latifolia</i> | Mountain Laurel |
| 3. <i>Rhus copallina</i> | Dwarf Sumac |
| 4. <i>Rhododendron calendulaceum</i> | Flame Azalea |
| 5. <i>Robinia hispida</i> | Bristly Locust |
| 6. <i>Sambucus canadensis</i> | Elderberry |

Trees

- | | |
|-----------------------------------|---------------|
| 1. <i>Acer rubrum</i> | Red Maple |
| 2. <i>Carpinus caroliniana</i> | Musclewood |
| 3. <i>Cercis canadensis</i> | Redbud |
| 4. <i>Liquidambar styraciflua</i> | Sweetgum |
| 5. <i>Liriodendron tulipifera</i> | Tuliptree |
| 6. <i>Nyssa sylvatica</i> | Black Tupelo |
| 7. <i>Oxydendron arboretum</i> | Sourwood |
| 8. <i>Pinus rigida</i> | Pitch Pine |
| 9. <i>Pinus virginiana</i> | Virginia Pine |
| 10. <i>Robinia pseudoacacia</i> | Black Locust |

GRSM Seed Inventory at the National Plant Materials Center

Accession	Release	Lot Number	Bin Number	Current Test Date	Total Purity	Viability	Quantity On Hand	
							PLS%	Bulk
Andropogon glomeratus (ANGL2) / bushy bluestem								
9078720		SWC-00-GRSMELIJA		9/21/2000	66.32	10	6.63	45.36 g
9078720		SWC-04-GRSMINCRS						5.50 lbs
Aster (ASTER) / aster								
9078704		SWC-95-GRSM704						54.43 g
9078704		SWC-96-GRSMB704						58.97 g
9078704		SWC-97-GRSMB704		11/30/20	91.18	77	70.2	4.80 lbs
9078704		SWC-98-GRSMB704		4/5/1999	96.63	74	71.5	9.80 lbs
9078706		SWC-00-GRSMB706		9/13/2000	97.95	45	44.0	5.00 lbs
9078706		SWC-01-GRSMB706		3/20/2000	86.56	1	0.86	231.33 g
Coreopsis major (COMA6) / greater tickseed								
9078702		SWC-97-GRSMFHPB						36.29 g
Danthonia compressa (DACO) / flattened oatgrass								
9061476		SCO-03-GRSM9398B		4/14/2000	97.99	87	85.2	430.91 g
9061476		SWC-02-						45.36 g
9077006		SWC-93-						49.89 g
9077006		SWC-94-						36.29 g
Elymus virginicus (ELVI3) / Virginia wildrye								
9061471		SCO-97-GRSMF3ARC		12/21/20	98.12	86	84.3	180.00 lbs
9061471		SCO-98-GRSMF3		12/21/20	78.72	53	41.7	105.00 lbs
Eupatorium serotinum (EUSE2) / lateflowering thoroughwort								
9078717		SWC-99-						40.82 g
Juncus tenuis (JUTE) / poverty rush								
9077180		SCO-01-GRSMUP001		6/10/2000	97.65	98	95.6	20.60 lbs
9077180		SCO-02-GRSMUP001		12/3/2000	81.24	63	51.1	7.60 lbs
9077180		SCO-03-GRSMUP001		6/1/2004	96.91	58	56.2	2.60 lbs
Lespedeza capitata (LECA8) / roundhead lespedeza								
9077164		SCO-03-GRSMINCRE						47.17 g
Lespedeza hirta (LEHI2) / hairy lespedeza								
9061478		SCO-00-GRSMUP2						9.07 g
9061478		SCO-01-GRSMFIBLN		12/28/20	99.81	11	10.9	7.10 lbs
9061478		SCO-98-GRSMUP		12/28/20	98.00	0	70.5	140.08 g
Panicum anceps (PAAN) / beaked panicgrass								
9078711		SCO-02-GRSMCAIF		11/25/20	99.46			6.60 lbs
9078711		SWC-00-		11/7/2000	94.81	39	38.3	17.20 lbs
9078711		SWC-03-GRSMFLD24		6/7/2004	96.30			112.00 lbs

GRSM Seed Inventory at the National Plant Materials Center

Accession	Release	Lot Number	Bin Number	Current Test Date	Purity	Total Viability	PLS%	Quantity On Hand	Bulk
Pityopsis graminifolia (PIGR4) / narrowleaf silkgrass									
9061474		SCO-00-GRSMD1		8/21/200	91.38			1.30	lbs
9061474		SCO-01-GRSMD1		5/2/2002	95.70	31	29.6	3.30	lbs
9061474		SCO-02-GRSMD1F1B		3/17/200	93.35	0	0	10.80	lbs
9061474		SCO-04-GRSMD1						15.20	lbs
9077020		SWC-94-GRSMFHP						13.61	g
Rhus copallinum (RHCO) / flameleaf sumac									
9077002		SWC-94-GRSMSPUR						4.80	lbs
Robinia pseudoacacia (ROPS) / black locust									
9061479		SWC-91-GRSMSPUR						10.60	lbs
9061480		SWC-91-						8.00	lbs
Saccharum alopecuroidum (SAAL9) / silver plumegrass									
9078726		SWC-02-						22.68	g
Saccharum giganteum (SAGI) / sugarcane plumegrass									
9078716		SWC-04-GRSMINCRS						1.50	lbs
Schizachyrium scoparium (SCSC) / little bluestem									
9078712		SWC-03-GRSMINCRS		6/21/200	32.80	20	6.56	23.10	lbs
9078712		SWC-04-GRSMINCRS						11.50	lbs
Solidago (SOLID) / goldenrod									
9077029		SWC-94-GRSMFHPWL		2/4/2003	68.43	0	0	145.15	g
9077161		SCO-02-GRSMI161		3/20/200	94.03	55	51.7	2.50	lbs
9077161		SWC-00-GRSMI161						9.07	g
9077161		SWC-94-		2/4/2003	62.43	62	38.7	190.51	g
9078708		SCO-00-GRSM1708		3/21/200	52.13	15	7.81	58.97	g
9078708		SCO-01-GRSM1708		2/24/200	83.30	5	4.16	4.50	lbs
Solidago canadensis var. lepida (SOCAL) / Canada goldenrod									
9078722		SWC-00-		3/20/200	68.99	18	12.4	136.08	g
Solidago rugosa (SORU2) / wrinkleleaf goldenrod									
9078721		SWC-00-GRSMELIOL						9.07	g
Sorghastrum nutans (SONU2) / Indiangrass									
9061477		SCO-00-GRSMLOCUS		10/2/200	96.84	80	77.4	74.13	lbs
9061477		SCO-02-GRSML0CST		1/13/200		24		33.00	lbs
9061477		SCO-02-GRSMLSTBN		1/13/200	94.07	41	38.5	12.30	lbs
9061477		SCO-03-GRSMLOCUS						226.79	g
9061477		SCO-04-GRSMLOCST						55.50	lbs
9077021		SWC-00-GRSMINCFD		10/1/200	49.99	27	13.4	26.10	lbs
9077021		SWC-01-GRSMCADE		1/13/200		19		64.00	lbs
9077021		SWC-01-GRSMINCRS		7/2/2002	88.82	7	6.21	40.80	lbs
9077021		SWC-02-GRSMINCRS		11/25/20	74.68	50	37.3	145.00	lbs
9077021		SWC-03-GRSMINCRS		6/3/2004	69.70	11	35.5	150.90	lbs

Woody Plant Container Inventory Spring 2005

Species	Accession	Project	Container	number	Height	Location	
<u>Ericaceous</u>							
Gaylussaccia baccata		GRSM	gallon	5	12-24"	Sh. Hse.	
Kalmia latifolia	9077005	GRSM	quart	20	3-6"	Sh. Hse.	
Kalmia latifolia	9077005	GRSM	1/2 gallon	16	3-10"	Sh. Hse.	
Kalmia latifolia	9077005	GRSM	1/2 gallon	15	10-15"	Sh. Hse.	
Kalmia latifolia	9077005	GRSM	gallon	11	6-20"	Sh. Hse.	
Oxydendrum arboreum		GRSM	quart	1	4"	Sh. Hse.	
Oxydendrum arboreum		GRSM	1/2 gallon	1	5"	Sh. Hse.	
Rhododendron calendulaceum	9078709	GRSM	quart	4	3"	Sh. Hse.	
Rhododendron calendulaceum	9078709	GRSM	gallon	26	8-36"	Sh. Hse.	
Rhododendron calendulaceum	9078709	GRSM	2 gallon	2	10-30"	Sh. Hse.	
<u>Total Containers:</u>				<u>101</u>			