

BIG FLATS PLANT MATERIALS CENTER
USDA, SOIL CONSERVATION SERVICE
CORNING, NEW YORK

1993 ACADIA NATIONAL PARK ANNUAL REPORT

I. INTRODUCTION

The USDA, Soil Conservation Service, Big Flats Plant Materials Center entered into an interagency agreement with the USDI National Park Service, Acadia National Park on September 21, 1992. The Soil Conservation Service agreed to:

- A. Collect seed of selected species from within Acadia National Park boundaries.
- B. Use these seeds to product isolated increase fields of grasses and forbs and transplants of shrubs and trees. A minimum of (3) grasses, (3) forbs, (6) shrubs, and (2) tree species will be supplied.
- C. Make available seed and transplants to acadia National Park for revegetation of the Federal Lands Highways Program road projects in the park form 1994 through 1996.

The park will use the plant materials for roadside revegetation after resurfacing the park loop road and up-grading the Carriage Paths in the park.

Since this agreement was approved in September, 1992, PMC activities have focused on seed collection in the Acadia National Park, seed processing and conditioning and seed/plant propagation at the Plant Materials Center.

II. ACCESSIONS INVOLVED

The following species have been collected for increase in 1992:

Common Name	Scientific Name	Symbol
<u>Grasses</u>		
poverty grass	Danthonia spicata	DASP2
common hairgrass	Deschampsia flexuosa	DEFL
red fescue	Festuca rubra	FERU2
<u>Forbs</u>		
field pussytoes	Antennaria neglecta	ANNE
large-leaved aster	Aster macrophyllus	ASMA2
New York aster	Aster novi-belgii	ASNO
Canada goldenrod	Solidago canadensis	SOCA6
Downey goldenrod	Solidago puberula	SOPU
rough-stemmed goldenrod	Solidago rugosa	SOPU2
yellow rattle	Rhinanthus crista-galli	RHCR2
flat-topped aster	Aster umbellatus	ASUM
wild sarsparilla	Aralia nudicaulis	ARNU2

Shrubs

bunchberry dogwood	Cornus canadensis	COCA13
bayberry	Myrica pennsylvanica	MYPE2
rhodora	Rhododendron canadense	RHCA6
lambkill/sheep laurel	Kalmia angustifolia	KAAN
lowbush blueberry	Vaccinium angustifolium	VAAN
dwarf juniper	Juniperus communis	JUCO6
black huckleberry	Gaylussachia baccata	GABA
wild raisin	Virburnum cassinoides	VICA
winterberry	Ilex verticillata	ILVE

Trees

red maple	Acer rubrum	ACRU
shadbush	Amelanchier spp.	AMELA
white birch	Betula papyrifera	BEPA
white pine	Pinus strobus	PIST
red spruce	Picea rubens	PIRU
white spruce	Picea glauca	PIGL

III/IV COLLECTION INFORMATION/SEED CONDITION INFORMATION

Collections were made throughout the park so each species was collected from numerous locations. The seed collections have been combined for each species and are considered as one population.

Two collection trips were made in 1993: July 25th-30th and October 3rd-5th. Collections were also made by park personnel and sent to the PMC for processing. The collection information includes 1992 and 1993 trips.

<u>SPECIES</u>	<u>HARVEST DATE</u>	<u>BULK HARVEST AMOUNT</u>	<u>CLEAN SEED WEIGHT</u>
<u>GRASSES</u>		(gm/lb)	(gm/lb)
Poverty Oatgrass	8/4/92	745/1.64	295.1/.65
<u>Danthonia spicata</u>	7/26/93	3881.7/8.55 (hand stripped)	703.7/.55
	7/29/93	3586.6/7.90 (clippers)	.44/.0001
Common hairgrass	8/5/92	1897.7/4.18	317.8/.7
<u>Deschampsia flexuosa</u>	7/28/93	635.6/1.40 (hand stripped)	107.0/.23
	7/27/93	363.2/.8 (hand stripped)	75.3/.17
	7/27/93	1316.6/2.9 (clippers)	133.5/.29
Red fescue	8/4/92	2270/5.06	1430.1/3.15
<u>Festuca rubra</u>	7/29/93	4086/9.0 (hedge clipper)	567.5/1.25
	7/28/93	885.3/1.95 (hand stripped)	181.6/.4
	7/26/93	3722.8/8.2 (hand stripped)	1316.6/2.9
	7/28/93	181.6/.4	106/.23
	(Hulls core house)		
	7/23/93	158.9/.35	102.3/.22

SPECIES	HARVEST DATE	BULK HARVEST AMOUNT	CLEAN SEED WEIGHT
GRASSES		(gm/lb)	(gm/lb)
Field pussytoes <u>Antennaria neglecta</u>	7/7/92 (New Eagle Lake Road) 6/30/93	22.7/.05 45.4/.1	22.7/.05
large leaved aster <u>Aster macrophyllus</u>	10/2/92 10/4/93	1293.9/2.85 1000/2.2	134/.30
New York aster <u>Aster novi-belgii</u>	10/1/92	435.8/.96	11/.02
flat-topped aster <u>Aster unbellatus</u>	11/22/93 10/8/92	140/.31 144/.32	12.4/.02 10/.02
Canada goldenrod <u>Solidago canadensis</u>	10/3/92 10/4/93	1135/2.5 54/.01	171/.38 10/.02
Downy goldenrod <u>Solidago puberula</u>	10/2/92 11/2/93 11/22/93	1679.8/3.70 423/.93 93/.20	123.5/.27 5.0/.01
yellow rattle <u>Rhinanthus</u> <u>crista-galli</u>	8/6/92 7/28/93	272.4/.60 454/1.0	127.12/.28 89.8/.20
flat-topped aster <u>Aster umbellatus</u>	10/2/92 10/8/92 11/9/93	1611.7/3.55 229/.5 100/.22	420/.93 14.5/.03
wild sarsparilla <u>Aralia nudicaulis</u>	8/5/92 7/26/93	3414.08/7.52 4676.2/10.3	192.1/.42 119/.26
bunchberry dogwood <u>Cornus canadensis</u>	8/5/92 9/1/92 7/27/93	2792.1/6.15 908/2.0 1157.7/2.55	156.5/.34 58.2/.13 46.2/.10
bayberry <u>Myrica pennsylvanica</u>	10/2/92 10/8/92	1743.36/3.84 99.8/.22	681/1.5 99.8/.22
rhodora <u>Rhododendron</u> <u>canadense</u>	10/1/92 10/8/92 10/4/93 11/22/93	463.1/1.02 390.4/.86 1000/2.2 140/.31	385.9/.85 63.5/.14
lambkill/sheep laurel <u>Kalmia angustifolia</u>	10/1/92 10/4/93	962.5/2.12 2600/5.7	157.5/.35
lowbush blueberry <u>Vaccinium</u> <u>angustifolium</u>	8/7/92 9/1/92 7/28/93	3368.7/7.42 1071.4/2.36 2746.7/6.05	.67/.002 16/.04 45.4/.1

SPECIES	HARVEST DATE	BULK HARVEST AMOUNT	CLEAN SEED WEIGHT
SHURBS		(gm/lb)	(gm/lb)
dwarf juniper	9/1/92	908/2.04	204.3/.45
<u>Juniper communis</u>	10/1/92	227/.5	227/.5
	10/2/92	1743.4/3.84	726.4/1.6
	10/7/92	2197.4/4.84	1838.7/4.05
black huckleberry	9/1/92	5457.1/12.2	422.5/.93
<u>Gaylussachia</u>	10/1/92	227/.5	
<u>baccata</u>	10/8/92	703.7/1.55	
	(Little Moose Island)		
	10/7/92	1339.3/2.92	
wild raisin	10/1/92	5475.2/12.06	608.4/1.34
<u>Viburnum</u>	10/4/93	601/1.3	
<u>cassinoides</u>			
winterberry	10/1/92	1362/3.00	136.2/.3
<u>Ilex verticillata</u>			

SPECIES	HARVEST DATE	BULK HARVEST AMOUNT	CLEAN SEED WEIGHT
TREES		(gm/lb)	(gm/lb)
red maple	7/7/92	4 bags of leaf litter	
<u>Acer rubrum</u>	6/93	908/2.0	
shadbush	8/4/92	1107.8/2.44	82.6/.18
<u>Amelanchier spp.</u>	7/29/93	1884.1/4.15	40/.09
white birch	9/1/92	2388.0/5.26	567.5/1.25
<u>Betula papyrifera</u>			
white pine	10/4/92	2201.9/4.85	120/.25
<u>Pinus strobus</u>			
red spruce	9/31/92	1316.6/2.90	16/.04
<u>Picea rubens</u>			
white spruce	9/31/92	1988.5/4.38	.4(kg)/.1
<u>Picea glauca</u>	10/8/92	690.1/1.52	
red oak (Seur de Mont)	10/7/92	99.9/.22	99.9/.22
<u>Quercus rubra</u>			

V. SEED PRODUCTION ESTABLISHMENT - First YearA. GREENHOUSE TRANSPLANTS TO THE FIELD

Species	Planting Date	Rate (lb/A)	Acres Planted	Stand Rating
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Poverty oatgrass	8/26/93	transplants	.85 ac	good
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Plants were started in greenhouse in Rootainer bookplanters in June 1993 totalling 7,796 plants. Transplanted to the field (block 1) on August 26, 1993, with Ellis transplanter. Row spacing 42" o.c. with plant spacing at 16" in the row. Sprayed Surflan herbicide immediately after planting. Field was mulched with straw in early December.

Hairgrass	9/2/93	transplants	.17 ac	good
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Plants were started in greenhouse in Rootainer bookplanters in June 1993 totalling 1,545 plants. Transplanted to the field (block 5) on September 2, 1993, with Ellis transplanter. Row spacing 42" o.c. with plant spacing at 16" in the row. Sprayed Surflan herbicide immediately after planting. Field was mulched with straw in early December.

Red Fescue	8/24/93	transplants	.69 ac	good
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Plants were started in greenhouse in Rootainer bookplanters in June 1993 totalling 6,327 plants. Transplanted to the field (block 4) on August 24, 1993, with Ellis transplanter. Row spacing 42" o.c. with plant spacing at 16" in the row. Sprayed Surflan herbicide immediately after planting. Field was mulched with straw in early December.

B. DIRECT SEEDING IN FIELD

Species	Planting Date	Rate (lb/A)	Acre Planted	Stand Rating
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large-leaved aster	6/17/93	2.5lb/ac	.18 ac	no germ.
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Direct seeded with Planet Jr. (seed hand-fed through the unit) in a prepared field (10 rows, 42" o.c., 650 feet long). No rainfall after seeding contributed to lack of germination.

New York Aster	6/18/93	2.2lb/ac	.18 ac	no germ.
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Direct seeded with Planet Jr. (seed hand-fed through the unit) in a prepared field (20 rows, 42" o.c., 115 feet long). No rainfall after seeding contributed to lack of germination.

Canada goldenrod	6/18/93	1.8lb/ac	.19 ac	no germ.
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Direct seeded with Planet Jr. (seed hand-fed through the unit) in a prepared field (20 rows, 42" o.c., 120 feet long). No rainfall after seeding contributed to lack of germination.

V. SEED PRODUCTIONB. DIRECT SEEDING IN FIELD

Species	Planting Date	Rate (lb/A)	Acres Planted	Stand Rating
Downy goldenrod	6/18/93	1.6lb/ac	.21 ac	no germ.

Direct seeded with Planet Jr. (seed hand-fed through the unit) in a prepared field (22 rows, 42" o.c., 120 feet long). No rainfall after seeding contributed to lack of germination.

flat-topped aster	6/18/93	2.0lb/ac	.16 ac	no germ.
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Direct seeded with Planet Jr. (seed hand-fed through the unit) in a prepared field (12 rows, 42" o.c., 170 feet long). No rainfall after seeding contributed to lack of germination.

red fescue	6/21/93	.3lb/ac	.46 ac	v. poor
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Direct seeded with Planet Jr. with hole #32 in a prepared field (12 rows, 42" o.c., 480 feet long). Poor stand due to lack of adequate rainfall.

hairgrass	6/21/93	.3lb/ac	.49 ac	v. poor
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Direct seeded with Planet Jr. with hole #36 in a prepared field (12 rows, 42" o.c., 500 feet long). Poor stand due to lack of adequate rainfall.

C. GREENHOUSE ROOTAINER SEEDINGS

Species	Planting Date	Number of Cells Planted	Stand Rating
field pussytoes	6/22/93	700 cells	few germinated
yellow rattle	6/22/93	1,260 cells	no germination
wild sarsparilla	6/22/93	840 cells	no germination

VI. SEED PRODUCTION - FOLLOWING YEARS

All seed production fields are under one year old.

VII. TRANSPLANT PRODUCTIONA. UTILIZING GREENHOUSE MIST SYSTEM

Species	Material Source/Date	Number Planted	Number Survived
dwarf juniper	cutting 7/28/93	175	150
rhodora	softwood cutting 7/28/93	70	2
lambkill/sheep laurel	softwood cutting 7/28/93	80	50
huckleberry	softwood cutting 7/28/93	50	0

These plants were grown in perlite (10" deep) under a greenhouse mist system. The plants were removed from the mist system during the winter and potted up in the greenhouse.

B. DIRECT SEEDINGS IN WOODY BEDS

July 8, 1992 Red Maple

Four large bags of leaf litter was collected from the under-story of red maple stand. Since the red maple seeds were hard to find, we hoped red maple seeds would be in the leaf litter. Upon arriving at the center, the material was spread on 60' of woody beds and lightly rototilled into the top 1 1/1". A light layering of wood chips was applied over the beds. Irrigation was applied as needed during the summer months. By June 1993, approximately 140 seedlings had germinated and were going well. In November 1993, these red maple seedlings were dug up and placed in cold storage for later potting during the winter in the greenhouse.

June 24, 1993 White pine, winterberry, red spruce, white spruce, shadbush, bayberry, bunchberry, blueberry, huckleberry, beach pea, rhodora, lamb/sheep laurel, juniper, wild raisin, white birch

These species were direct seeded in the PMC woody beds. The seed was hand spread followed by a light layer of sand and rolled for good soil/seed contact. The bed was covered with growth cloth and under regular irrigation. As of early winter, none of the species had germinated. This may in part be due to some weed competition and particular seed germination requirements. The bed will be monitored in 1994 for species which may have required a stratification period.

C. DIRECT SEEDING IN GREENHOUSE

Species	Date Seeded	Number Germinated
juniper	6/22/93	0
white pine	6/29/93	71
white birch	6/23/93	51
red spruce	6/23/93	1
white spruce	6/29/93	24
wild raisin	6/29/93	19
blueberry	6/22/93	0
huckleberry	6/22/93	0
bayberry	6/22/93	0
bunchberry	6/22/93	0

Seeds were seeded into plastic greenhouse flats (one flat/species) filled with Metro-mix 250 in the greenhouse. The flats were watered as needed. The seedlings will be transplanted into conetainers during the winter.

D. DIRECT SEEDING INTO PALLET PLANTERS

On November 18, 1993, seed of wild sarsparilla, shadbush, rhodora, black huckleberry, bunchberry, juniper, lowbush blueberry, winterberry, bayberry, and wild raisin was seeded into large pallet-sized boxes, filled with silt loam soil. After direct seeding, a light layer of sand was applied, firmed, covered with pine needles and left outside in the lathe house over the winter. We are trying to see if we can keep tighter controls on the plants growing environment.