

BIG FLATS PLANT MATERIALS CENTER
USDA, NATURAL RESOURCES CONSERVATION SERVICE
CORNING, NY

1994 ACADIA NATIONAL PARK ANNUAL REPORT

I. INTRODUCTION

The USDA, Natural Resources Conservation Service (formerly 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 Natural Resources Conservation Service agreed to:

- A. Collect seed of selected species from within Acadia National Park boundaries.
- B. Use these seeds to produce 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 from 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:

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 saraparilla	Aralia nudicaulis	ARNU2

Shrubs

bunchberry dogwood	Cornus canadensis	COCA13
bayberry	Myrica pennsylvanica	MYPE2
rhodora	Rhododendron canadense	RHCA6
lamkill/sheep laurel	Kalmia angustifolia	KAAN
lowbush blueberry	Vaccinium angustifolium	VAAN
dwarf juniper	Juniperus communis	JUCO6
black huckleberry	Gaylussachia baccata	GABA
wild raisin	Birburnum 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 1994: July 24-29th and October 23-28th. Collections were also made by park personnel and sent to the PMC for processing on June 27th and July 14th. The collection information includes all 1993 trips.

SPECIES	HARVEST DATE	BULK HARVEST AMOUNT	CLEAN SEED WT
Grasses		(gm/lb)	(gm/lb)
Poverty oatgrass	7/20/94	(250 gm/ .55 lb)	(100 gm/.22 lb)
Danthonia spicata	7/25/94	(1975 gm/4.35 lb)	(363 gm/.08 lb)
	7/26/94	(250 gm/ .55 lb)	(33.8gm/.07 lb)
Common hairgrass	7/27/94	(250 gm/ .55 lb)	(39.5gm/.09 lb)
Deschampsia flexuosa			
Red fescue	7/20/94	(90.8 gm/.20 lb)	(50.2gm/.11 lb)
	7/21/94	(90.8 gm/.20 lb)	(43.2gm/.10 lb)
	7/25/94	(2202 gm/4.85 lb)	(408.6gm/.9 lb)
	7/26/94	(136 gm/.30 lb)	(71 gm/.16 lb)
	7/28/94	(182 gm/.40 lb)	(83.8gm/.18 lb)
	7/28/94	(318 gm/.70 lb)	(100.7gm/.22lb)

SPECIES	HARVEST DATE	BULK HARVEST AMOUNT	CLEAN SEED WT
FORBS		(gm/lb)	(gm/lb)
large leaf aster Aster macrophyllus	10/24/94	(2883 gm/6.35 lb)	(101.5gm/.22 lb)
New York aster Aster novi-belgii	10/25/94	(1680 gm/3.70 lb)	(12.7 gm/.03 lb)
flat-topped aster Aster umbellatus	10/26/94	(2406 gm/5.30 lb)	(165.3gm/.36 lb)
Canada goldenrod Solidago canadensis	10/24/94	(1498 gm/3.30 lb)	(119.5gm/.26 lb)
Downy goldenrod Solidago puberula	10/25/94	(2656 gm/5.85 lb)	(122.4gm/.27 lb)
yellow rattle Rhinanthus crista-galli	7/26/94	(90.8 gm/.20 lb)	(43 gm/.09 lb)
Shrubs		(gm/lb)	(gm/lb)
rhodora Rhododendron canadense	10/26/94	(295 gm/.65 lb)	(35.1 gm/.08 lb)
bayberry Myrica pennsylvanica	10/25/94	(1021 gm/2.25 lb)	(204.3gm/.45 lb)
lambkill/sheep laurel Kalmia angustifolia	10/26/94	(182 gm/.40 lb)	(8 gm/.02 lb)
winterberry Ilex verticillata	10/25/94	(3973 gm/8.75 lb)	(181.6gm/.04 lb)
Trees		(gm/lb)	(gm/lb)
white pine Pinus strobus	10/26/94	(2883 gm/6.35 lb) cones	(0. gm/ 0. lb)
red spruce Picea rubens	10/26/94	(1521 gm/3.35 lb) cones	(104.5gm/.23 lb)
white spruce Picea glauca	10/26/94	(2134 gm/4.70 lb) cones	(14 gm/.03 lb)

<u>SPECIES</u>	<u>DATE COLLECTED</u>	<u>NUMBER CUTTINGS</u>
<u>Vegetative Material Collected</u>		<u>No.</u>
rhodora Rhododendron canadense	04/20/94 (collected by J. Dickerson)	350 cuttings
lowbush blueberry Vaccinium angustifolium	04/20/94 (collected by J. Dickerson)	200 cuttings
dwarf juniper Juniperus communis	04/20/94 (collected by J. Dickerson)	900 cuttings
black huckleberry Gaylussachia baccata	04/20/94 (collected by J. Dickerson)	100 cuttings
wild raisin Virburnum cassinoides	10/25/94	220 cuttings
winterberry Ilex verticillata	10/26/94	450 cuttings
bayberry Myrica pennsylvanica	10/27/94	450 cuttings
rhodora Rhododendron canadense	10/27/94	780 cuttings
lambkill/sheep laurel Kalmia angustifolia	10/27/94	390 cuttings
juniper Juniper communis	10/26/94	830 cuttings
lowbush blueberry Vaccinium angustifolium	10/27/94	120 cuttings
black huckleberry Gaylussachia baccata	10/27/94	380 cuttings
dwarf juniper Juniperus communis	10/27/94	900 cuttings

The cuttings were planted in flats with a soil media of 1 part sand, 1 part peat and 1 part perlite. The cuttings were dipped in Woods rooting compound just prior to planting. The flats were placed in the greenhouse under an enclosed mist system.

Bunchberry dogwood (*Cornus canadensis*) plants were dug up bareroot and potted in Metro Mix 250 and placed in the greenhouse. Since seed may take 2 or more years to germination, cuttings were explored. So far, this technique has merit.

Large-leaved aster (*Aster macrophyllus*) plants were dug up along the Witch Hole Pond trail that was scheduled for renovation. These plants were potted in 6 inch pots with Metro-mix 250. There was excellent survival with 68 plants by fall. The plants were over-wintered in the outside lathe house.

V. SEED PRODUCTION ESTABLISHMENT - FIRST YEAR

A. GREENHOUSE TRANSPLANTS TO THE FIELD

<u>Species</u>	<u>Planting Date</u>	<u>Rate (lb/A)</u>	<u>Acres Planted</u>	<u>Stand Rating</u>	<u>Seed Yield</u>
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large leaf aster	6/8/94	400 plants	.1 ac	good	0
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Plants were started in greenhouse in Rootainers on 2/9/94, totalling 400 plants. Transplanted to field (block 4) on June , 1994, with Ellis transplanter. Row spacing 42" o.c. with plant spacing at 16" in the row. Sprayed Surflan herbicide immediately after planting. The plants did not form seedheads in the first year.

New York aster	6/8/94	750 plants	.2 ac	good	386 gm
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Plants were started in greenhouse in Rootainers on 2/3/94, totalling 750 plants. Transplanted to field (block 4) on June , 1994 with Ellis transplanter. Row spacing 42" o.c. with plant spacing at 16" in the row. Sprayed Surflan herbicide immediately after planting. The plants produced good seed the first year that it was harvested. The seed test results were germination 68% and purity 93.7%.

Downy goldenrod	6/9/94	450 plants	.1 ac	good	138.8 gm
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Plants were started in greenhouse in Rootainers on 2/3/94, totalling 450 plants. Transplanted to field (block 4) on June , 1994 with Ellis transplanter. Row spacing 42" o.c. with plant spacing at 16" in the row. Sprayed Surflan herbicide immediately after planting. The plants produced good seed in the first year.

Canada goldenrod	6/9/94	740 plants	.1 ac	good	9.5 gm
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Plants were started in greenhouse in Rootainers on 2/8/94, totalling 740 plants. Transplanted to field (block 4) on June 9, 1994 with Ellis transplanter. Row spacing 42" o.c. with plant spacing at 16" in the row. Sprayed Surflan herbicide immediately after planting. The plants formed seedheads, but the seed matured very late, if at all, resulting in low yields.

Rough-stem goldenrod	6/9/94	250 plants	.1 ac	good	91 gm
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Plants were started in greenhouse in Rootainers on 2/8/94, totalling 250 plants. Transplanted to field (block 4) on June 9, 1994 with Ellis transplanter. Row spacing 42" o.c. with plant spacing at 16" in the row. Sprayed Surflan herbicide immediately after planting. The plants produced seed in the first year.

red fescue	6/21/94	8,900 plants	.3 ac	very good	0
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Plants were started in greenhouse in Rootainers on 2/3/94, totalling 8,900 plants. Transplanted to field (block 4) on June 21, 1994 with Ellis transplanter. Row spacing 42" o.c. with plant spacing at 16" in the row. Sprayed Surflan herbicide immediately after planting. The plants established well but produced no seed in first year.

B. DIRECT SEEDING INTO THE FIELD

<u>Species</u>	<u>Planting Date</u>	<u>Rate (lb/A)</u>	<u>Acres Planted</u>	<u>Stand Rating</u>
red fescue	9/14/94	5 lb/A	.4 ac	very good

Direct seeded with Planet Jr. in a prepared field (18 rows, 42" o.c., 200 feet long). The field had excellent germination with a very good stand going into winter.

C. DIRECT SEEDING IN WOODY BEDS

November 11, 1994 bayberry, blueberry, juniper, wild raisin, huckleberry, lambkill, winterberry, bunchberry, rhodora, red spruce, white spruce, white pine, red maple, birch, shadbush

These species were direct seeded in the PMC woody beds. The seed was hand spread followed by a light layer of sand and hand topped for good soil/seed contact. The bed was covered with rye straw and covered with snow fence.

D. DIRECT SEEDING INTO PALLET PLANTERS

November 18, 1994 bayberry, blueberry, juniper, wild raisin, huckleberry, lambkill, winterberry, bunchberry, rhodora, red spruce, white spruce, white pine, red maple, birch, shadbush

The species were seeded into large pallet-size boxes, filled with silt loam soils. After direct seeding, a light layer of sand was applied, firmed and covered with rye straw and left outside in the lathe house over the winter.

E. OAK SEEDS

Red Oak (Quercus rubra) seeds were collected on May 26, 1994, along Witch Hole Pond Trail. Seed started sprouting in the drainage ditch among the leaves. These seeds and leaves were placed in flats in the greenhouse. The germinated plants were then transplanted into pots. A total of 624 plants were surviving in the fall.

VI. SEED PRODUCTION, FOLLOWING YEARS

Species	Harvest Date	Seed Harvest Wt.	Purity	Germination	Production Yield lbs/ac
red fescue (transplants)	8/94	5.60 lb	86.6 %	96 %	9.3 lb/ac
red fescue (transplants)	8/94	2.25 lb	91.4 %	95 %	3.8 lb/ac
New York aster	11/94	.85 lb	93.7 %	68 %	8.5 lb/ac
Downy goldenrod	11/94	.04 lb	-	-	.8 lb/ac
Canada goldenrod	11/94	.02 lb	-	-	.5 lb/ac
large-leaf aster	no seedheads formed				
rough-stemmed	11/94	harvested seedheads - no mature seed			
Poverty oatgrass	only a few seedheads formed in entire production-no harvest				
hairgrass	7/94	.85 lb	-	-	8.5 lb/ac

VII. TRANSPLANT PRODUCTION

<u>Species</u>	<u>Number of plants in pots on 10/31/94</u>
white spruce	22
white pine	200
white birch	232
red oak	624
bunchberry dogwood	63
sheep laurel	90
dwarf juniper	80
field pusseytoes	54
goldenrod	130
beach pea	40
yellow hawkweed	54

All of the above species were germinated from seed in prior years and potted in Metro-Mix 250. The above numbers were an inventory taken on October 31, 1994. The plants will be over-wintered in the lathe house or greenhouse.

VIII. CULTURAL TRIALS: RESTORATION, SALVAGE AND PLANTING OPERATIONS

The week of May 22, 1994, we participated in restoration work involving the salvaging of plants and planting them on disturbed/eroded sites in the park, with park personnel. Plants were hand dug, immediately placed on trucks and transported to the planting sites. The first site, a pull-off overlook on Park Loop Road, had a very steep slope with very little cover. Plants were hand planted, mulched with bark and watered by the fire crew. The second site at Long Lake, included an eroding trailhead on a steep slope. A combination of plants and physical barrier (logs and branches to route hikers) were utilized to stabilize the slope. At the third site along the Witch Hole Pond carriage road, bikers had cut a trail into the woods, killing off vegetation. The site was planted back to vegetation with the site completely restored. Observations of the sites were made in October. The plants at all the sites had very good survival, which can be contributed to digging/planting the plants within one day, mulching the sites to maintain the soil moisture, and the many waters during the summer by the fire crews. This restoration technique worked very well, especially at sites where there is high people pressure/high visibility and steep slopes that are eroding. By moving these larger mature plants of forbs and shrubs, there is an immediate vegetation cover of the site. The important points to remember is to handle the plant materials properly and maintain the sites after planting with bark mulch is possible, and watering, especially if there is a dry spell. By coordinating the road/carriage road work, plants can be utilized that would otherwise be lost in the construction work for restoring sites in the park. This operation was something new to the park staff and as the week proceeded, new ideas and techniques were refined or developed that improved the efficiency and survival of the plants. The park personnel did an excellent job and the cooperation of different park divisions should be commended. The success of the restoration work is due to their combined professional efforts.