

Project Number 08S232
Annual Report – December 2003
By: Dr. Gary L. Noller

**DINOSAUR NATIONAL MONUMENT
COOPERATIVE AGREEMENT**

Progress Report – 08S232
Dinosaur Agreement - continued

INTRODUCTION - This report covers the activities conducted by the Upper Colorado Environmental Plant Center, Meeker, Colorado, for the Dinosaur National Monument Plant Materials Agreement in 2003. The agreement was initiated in September 1996 and was amended in August 1997. A new agreement was developed in 2002. These agreements involve collecting and increasing five grass species native to Dinosaur National Monument. One grass seed field was removed so that the agreement now involves four grasses. These grasses will be used for restoration and to prevent non-indigenous weedy plants from invading.

TARGETED SPECIES OF GRASS

| Common Name | Scientific Name (Old) | Number |
|----------------------|--|---------------|
| Alkali sacaton | <i>Sporobolus airoides</i> | 9070954 |
| Basin wildrye | <i>Leymus cinereus</i> (<i>Elymus cinereus</i>) | 9070951 |
| Bluebunch wheatgrass | <i>Psuedoroegneria spicata ssp. spicata</i> (<i>Agropyron spicatum</i>) | 9070952 |
| Indian ricegrass | <i>Oryzopsis hymenoides</i> | 9070953 |
| Salina wildrye | <i>Leymus salinus ssp. salinus</i> (<i>Elymus salinus</i>) | Not collected |
| Sand dropseed | <i>Sporobolus cryptandrus</i> | Not collected |
| Western wheatgrass | <i>Pascopyrum smithii</i> (<i>Agropyron smithii</i>) | 9070955 |

In 2002 an additional species was added to the targeted list:

| | | |
|--------------|--|---------------|
| Squirreltail | <i>Elymus elymoides</i> (<i>Sitanion hystrix</i>) | Not collected |
|--------------|--|---------------|

**Progress Report – 08S232
Dinosaur Agreement - continued**

SEED COLLECTION AND CONDITIONING INFORMATION

INTRODUCTION - No additional seed was collected from Dinosaur National Monument for seed production at the plant center in 2003.

SEED PRODUCTION

INTRODUCTION - Seed fields were planted on November 5 and 6, 1997 and one additional field was added on July 20, 1998. In addition, one seed field (western wheatgrass) was removed in 1999, reducing the number of seed fields to four. Two seed fields (indian ricegrass and alkali sacaton) were interseeded in 1999 to improve stands.

When the bluebunch wheatgrass field was examined in May 2001, it was noted to be dry. The field was watered within a few days and then turned gray in color (early to mid June). The field was watered again in late June, but did not improve in appearance until late summer or early fall, and then did not look healthy. Only a few seed heads developed and the field was not harvested. A dry period from April through July was recorded in 2001, which may have contributed to the field's poor appearance, but was not considered to be the only factor. We do not know why the field looked poor and produced no seed. An additional planting of bluebunch wheatgrass was planted in 2001. The new planting produced a good stand in 2002, but was not harvested. In 2003 both plantings were harvested and seed production seemed normal.

The seed fields were inspected (see attachments) by the Colorado Seed Growers in 2003, which helps the plant center provide a quality product to Dinosaur National Monument. Table 1 lists the seed from Dinosaur National Monument stored at the plant center. The following updates the seed fields through 2003.

1. Indian ricegrass - November 5, 1997 - planted 8 rows (0.24 acre) - field 4 - planted at rate of about 30 seeds per foot of row - total seed lot (1.42 lb) used. Harvested light seed crop (52.0g), September 8, 1998 - moderate to good stand November 20, 1998. Harvested July 14, 1999, produced 1.24 lb clean seed. Harvested July 3, 2000, produced 0.97 lb clean seed. Harvested July 9, 2001, produced 0.95 lb clean seed. Harvested July 2, 2002, produced 3.6 lb clean seed. Harvested July 11, 2003, produced 8.0 lb of clean seed.
2. Bluebunch wheatgrass - November 5, 1997 - planted 8 rows (0.24 acre) - field 1 - planted at rate of about 30 seeds per foot of row - had few seed heads 1998, no harvest - good stand November 20, 1998. Harvested July 20, 1999, produced 16.5 lb clean seed. Harvested July 12, 2000, produced 1.4 lb clean seed. Not harvested in 2001. November 16, 2001, planted 6 rows (0.18 acre) at a rate of about 30 seeds per foot of row (0.35 lb planted), - field 1 - just south of original planting. New planting had good stand 2002, no harvest. Harvested old stand July 12, 2002, produced 300 g clean seed. Harvested both plantings July 16, 2003, produced 32.0 lb clean seed.

Progress Report – 08S232
Dinosaur Agreement - continued

3. Western wheatgrass - November 6, 1997 - planted 8 rows (0.24 acre) - field 6A - planted at rate of about 20 seeds per foot of row, due to small quantity of seed and rhizomatous habit of species. Noted some off type plants in 1998, will rouge these out in 1999 - few seed heads 1998, no harvest - excellent stand with numerous sprouts November 20, 1998. Field had numerous off type plants 1999, field plowed.
4. Basin wildrye - November 6, 1997 - planted 8 rows (0.24 acre) - field 8A - planted at rate of about 30 seeds per foot of row. Few seed heads fall 1998, no harvest - excellent stand November 20, 1998. Harvested August 5, 1999, produced 29.0 lb clean seed. Harvested July 25, 2000, produced 5.5 lb of clean seed. Harvested July 17, 2001, produced 10.8 lb of clean seed. Harvested July 23, 2002, produces 25.0 lb. clean seed. Harvested July 25, 2003, produced 52.0 lb clean seed.
5. Alkali sacaton - July 20, 1998 - planted 6 rows (0.18 acre) - field 4 - planted at a rate of about 30 seeds per foot of row - noted seedlings on September 2, 1998 - fair stand November 20, 1998. Harvested September 1, 1999, produced 99 grams of clean seed. Harvested two seed crops in 2000 (July 12 and September 11), produced 2.4 lb clean seed. Harvested two seed crops in 2001 (July 18 and September 14) produced 13.0 lb of clean seed. Harvested two seed crops 2002 (July 17 and September 10) produced 6.2 lb. clean seed. Harvested only once on August 4, 2003, produced 6.0 lb clean seed.

SEED SHIPMENTS

No seed was provided to Dinosaur in 2003.

Progress Report – 08S232
Dinosaur Agreement - continued

SUMMARY

1. A cooperative agreement between Dinosaur National Monument and Upper Colorado Environmental Plant Center was initiated in September 1996 and amended in August 1997. A new agreement was developed in 2002.
2. The agreement involved the collection, evaluation and increase of five grasses native to Dinosaur National Monument. Only four seed fields are now grown for seed production.
3. Seed fields were planted in November 1997 for four contract species and the final seed field (alkali sacaton) was added in July 1998.
4. The western wheatgrass seed field was plowed in 1999, due to numerous off type plants, which reduced the number of seed fields to four.
5. Two seed fields (indian ricegrass and alkali sacaton) were interseeded in 1999 to improve stands.
6. Seed crops were harvested from all seed production fields in 2003.
7. A new planting of bluebunch wheatgrass was planted in 2001, and had a good stand in 2002, but was not harvested. The original planting did produce seed in 2002. Both plantings were harvested in 2003.

Progress Report – 08S232
Dinosaur Agreement - continued

Table 1. A listing of seed by species and year of harvest from Dinosaur National Monument stored at the plant center.

| SPECIES | YEAR | BULK | PLS |
|----------------------|------------------------|-------------|------------|
| Basin wildrye | 1997 (park collected) | 10.69 lb | No test |
| | 1999 harvest | 29.00 lb | 25.70 lb |
| | 2000 " | 5.50 lb | 4.00 lb |
| | 2001 " | 10.80 lb | 7.40 lb |
| | 2002 " | 25.00 lb | 17.60 lb |
| | 2003 " | 52.00 lb | --- |
| Bluebunch wheatgrass | 1997 (park collected) | 0.46 lb | No test |
| | 1999 harvest lot 1 | 10.50 lb | 8.40 lb |
| | lot 2 | 6.00 lb | 3.60 lb |
| | 2000 harvest | 1.40 lb | 0.80 lb |
| | 2001 <u>NO</u> harvest | --- | --- |
| | 2002 (old planting) | 300g | 215g |
| | 2003 (both plantings) | 32.00 lb | --- |
| Indian ricegrass | 1997 (park collected) | 8g | No test |
| | 1999 harvest | 1.24 lb | 0.80 lb |
| | 2000 " | 0.97 lb | 0.30 lb |
| | 2001 " | 0.95 lb | 0.50 lb |
| | 2002 " | 3.60 lb | 1.15 lb |
| | 2003 " | 8.00 lb | --- |
| Alkali Sacaton | 1999 harvest | 99g | No test |
| | 2000 2-harvests | 2.40 lb | 0.70 lb |
| | 2001 " " | 13.00 lb | 1.50 lb |
| | 2002 2-harvests | 6.20 lb | 4.50 lb |
| | 2003 1-harvest | 6.00 lb | --- |