



YELLOWSTONE NATIONAL PARK
2003 Summary Report
prepared by
Natural Resources Conservation Service
Bridger Montana Plant Materials Center

INTRODUCTION: The Bridger PMC has maintained a cooperative agreement with Yellowstone National Park (YNP) since FY 1986. This agreement facilitates the collection, increase, and reestablishment of indigenous plant material for restoration of disturbances resulting from road construction and other improvement projects within Park boundaries.

In 2003, 15 allocations of 159 seed lots from 61 species were distributed to YNP, YNP-contracted growers, or the PMC totaling 330 pounds (150 kg). This included 85 grass lots (19 species) weighing 310 pounds (140 kg); 60 forb lots (32 species) weighing 16 pounds (7 kg); and 14 tree/shrub lots (15 species) weighing 4 pounds (2 kg). This includes the distribution of 10 grass lots (6 species) and 6 forb lots (4 species) to the PMC for planting seed increase fields.

ACCOMPLISHMENTS: Yellowstone National Park has identified future road projects allowing collection and production efforts to begin at least 3 years in advance of each project.

Wildland seed collections are made by Yellowstone National Park crews, dried, and either delivered to the Bridger PMC, or picked up by PMC personnel. In 2003, 87 collections were made from 43 species: 49 grasses (21 species) at 28.65 pounds (13 kg); 37 forbs (21 species) at 9.13 pounds (4.141 kg); and 1 shrub at 0.03 pound (0.012 kg). The wildland seed collections totaled 37.81 pounds (17.15 kg).

Records are maintained by the PMC of person-hours to collect each seed lot, from which the approximate cost of collecting native seed can be estimated. In 2003, YNP personnel spent more than 478 person hours in the activity of seed collection. There were approximately 296 hours (average 6 hours per recorded collection) dedicated to collecting grass seed, 176 hours (average 4.9 hours per recorded collection) for forbs, and 6 hours for the shrub species.

There were 8 grass and 4 forb increase blocks planted in 2003 for road projects. Older increase blocks of 4 grasses were removed due to natural decline in production or poor establishment. Currently there are 5.33 acres (2.157 hectares) planted with 24 accessions of 10 grass species and 0.58 acres (0.238 hectares) with 5 accessions of 4 forb species in seed increase blocks at the Bridger PMC.

During the past growing season, 17 different grass accessions (6 species) and 1 forb species were harvested, producing 550.56 pounds (249.732 kilograms) of clean seed. Seed production averaged approximately 163 pounds-per-acre (183 kilograms-per-hectare).

Tetrazolium viability tests were conducted on PMC seed increase production for 17 grass accessions. Percentage germination for the 6 grass species averaged 95 and ranged from 71 to 99.

The wildland collection and seed increase inventory contains 526 accessions (119 species) totaling 2,232 pounds (1,012 kg). This is comprised of 231 grass accessions (32 species) at 2,119 pounds (961 kg), 280 forb accessions (75 species) at 86 pounds (39 kg), and 15 shrub accessions (12 species) weighing 27 pounds (12 kg).

TECHNOLOGY DEVELOPMENT: All plant material collections are assigned accession numbers and inventoried in a database. The lot identification numbers have been upgraded to include identification by individual construction projects.

A small trial was conducted at the PMC to assess the potential affect of head smut contamination on seed production in YNP mountain brome grass. The results indicate that overall production was reduced more than 35% when seed was not pre-treated with a fungicide to prevent head smut contamination, and seed viability was not necessarily impaired. The PMC intends to treat the seed of all *Bromus* species from YNP with a fungicide at, or prior to, the time of planting.

A laboratory experiment was conducted at MSU-Bozeman to identify a naturally occurring head smut commonly found in plants and seed of many cool-season grasses. The results indicate that the species, *Ustilago bullata*, infects mountain brome plants and contaminates seed. The level of head smut infestation may range from locally sparse to abundant, and the pathogen is known to reduce plant and seed productivity.