DEVELOPING NATIVE PLANTS FOR BIG BEND NATIONAL PARK[1]

by

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Abstract. In 1989, under a Memorandum of Understanding between the National Park Service (NPS) and the Soil Conservation Service (SCS), the Big Bend National Park (BBNP) and the SCS Plant Materials Center (PMC) at Knox City, Texas, entered into an interagency agreement whereby the PMC provides plant materials and cultural information unavailable from other sources to the Park on certain species. A major national objective of the NPS requires the use of native species that originate from the same vegetative ecozones for any revegetation of areas impacted by construction activities. The areas must blend with the existing landscape and, in keeping with the natural setting, no contamination with species foreign to the sites can be tolerated. BBNP, in undertaking major road renovation and recognizing the need to revegetate road shoulders for stabilization, requested personnel from the PMC to discuss the possibility of the PMC collecting and increasing plant materials appropriate to the Park's needs. On-site evaluations were conducted to identify indigenous species needed by the Park. Six species of grasses were selected to address the revegetation need of the 3 distinct ecozones affected by the intended road work. Two species of forbs were also selected to add diversity and improve landscape appearance. Details of the 5-year agreement, which was finalized late in 1989, provided for seed collecting the first 2 years to take advantage of varying weather conditions. The remaining 3 years would focus on seed production, seed conditioning, and developing new technologies for producing these species.

Introduction

Big Bend National Park is located in remote southwest Texas and is characteristic of the Trans-Pecos region of Texas and New Mexico. Bordered on 3 sides by the Rio Grande River, hence the name "big bend", the park is comprised of some 708,281 acres. Elevation within the region ranges from 1,700 ft to 7,835 ft at Emory Peak. Average precipitation for the park area is 13 in, which usually falls from April through September.

Park Objectives

In February 1989, personnel from the James E. "Bud" Smith Plant Materials Center (PMC) at Knox City, Texas and the NPS Denver Service Center met at Big Bend National Park to review the Park's plans for road renovation and vegetation needs for erosion control and road shoulder stabilization.

A representative from the Texas Parks and Wildlife Department was present as well because of similar needs in adjacent state parks. As part of construction activities, National Park policy requires they revegetate with species originating from the same vegetative zone as areas impacted by construction activities. Within this area of construction, 3 of the 4 distinct vegetative zones within the park are recognized. These zones include mixed prairie, desert grassland, and desert shrub vegetative zones.

Proceedings America Society of Mining and Reclamation, 1991 pp 509-510
DOI: 10.21000/JASMR91020509
https://doi.org/10.21000/JASMR91010509

Park plans call for major renovation along 22 mi of the Ross Maxwell Scenic Drive, which runs north and south in the western part of the park. Standard procedure involves rolling back the top few inches of soil and the natural seedbank that exists with this material. Upon completion of construction activities, this material will be placed back upon the disturbed area and will aid in natural vegetation.

The plan that evolved from this initial session called for PMC personnel to collect seed from 6 species of grasses and 2 species of forbs which will compliment the natural seedbank in the soil initially removed and placed back on the disturbed sites. Six species were selected as the basic component of a mixture suitable to the entire road section. These species included alkali sacaton (Sporobolus airoides), sideoats grama (Bouteloua curtipendula), cane bluestem (Bothriochloa barbinodis), green sprangletop (Leptochloa dubia), chisos bluebonnet (Lupinus havardii), and showy menodora (Menodora longiflora). Seed of false grama (Cathestecum erectum) and chino grama (Bouteloua bremiseta) were also collected for their unique ability to grow on steep, rocky slopes. These 2 species would be supplied if techniques were established to successfully germinate, establish, and produce seed.

Current Status

In October 1989, PMC personnel and a representative from Texas Parks and Wildlife returned to the area and made initial seed collections. Since the summer of 1989 did not produce any general rains over the park, seed production areas were few. Collections were made with sufficient amounts of seed of alkali sacaton, sideoats grama, cane bluestem and chino grama to plant increase fields. Smaller quantities of green sprangletop and false grama were obtained, thus plants were established in the greenhouse to insure enough plants for field planting. No seed of either chisos bluebonnet or showy menodora were collected that year or in the spring of 1990.

During the summer 1990, the park experienced good general rains. In late fall 1990, additional collections were made on sideoats grama, green sprangletop, and alkali sacaton. First-time collections were made on showy menodora and 1 additional forb, limoncilla (Pectis angustifola var. tenella). Limoncilla was collected for its asthetic value and will be produced for the park if propagation techniques can be developed. Chisos bluebonnet remains to be collected in April or May of 1991.

Increase fields of alkali sacaton, sideoats grama, cane bluestem and green sprangletop all produced seed in the fall of 1990. The seed collected, and that produced in 1990, will be used to increase the size of the production blocks to about 1 acre each for sideoats grama, cane bluestem and alkali sacaton. The green sprangletop will be expanded to approximately .5 acres. From 2 186-ft rows of chino grama and one-half row of false grama planted vegetatively, only 12 plants of the chino grama were produced. The false grama was a total failure on our first try at establishment.

Summary

The agreement between BBNP and Knox City PMC specifies seed be delivered between fall 1991 and spring 1993. Projected annual production estimates for the species being produced should insure that obligations to the park can be met in the time frames set, pending development of any new techniques associated with the establishment of some of the species produced. Information gained through this effort will surely be beneficial to Big Bend National Park, Soil Conservation Service, and other interested agencies.

Footnotes

[1]Paper presented at the 8th National Meeting of the American Society for Surface Mining and Reclamation, Durango, Colorado, May 14-17, 1991.

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