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PRELIMINARY STUDIES OF THE AGROSTOLOGY
 OF
 BLACK CANYON OF THE GUNNISON NATIONAL MONUMENT
 BY
 DR. JAMES M. ROMINGER, WESTERN STATE COLLEGE
 1962-63

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This report represents the results of a survey of the grass flora of the Black Canyon of the Gunnison National Monument which was conducted during the summer of 1962 under the auspices of the National Park Service. Six collecting trips were made to representative areas on both rims and to the canyon floor. Observation notes taken at each collecting site have been analyzed to determine the dominant species of grasses within each community and habitat represented within the monument boundaries.

Plants collected were pressed, mounted identified, and labeled. A complete set of grasses collected has been deposited with the Superintendent of the Black Canyon National Monument. Identifications were made from Harrington's Manual of the Plants of Colorado and Chase's revision of Hitchcock's Manual of the Grasses of the United States.

Sincere appreciation is expressed to Mr. Pat H. Miller, Chief Park Naturalist of the Colorado National Monument, for proposing this study and making the necessary arrangements for its realization.

The Black Canyon of the Gunnison National Monument lies on the western slopes of the central Rockies, 14 miles northeast of the city of Montrose in Montrose County, Colorado. The monument, established in 1933 by Presidential proclamation, covers an area of approximately 22 square miles. The Black Canyon has been formed over a period of at least two million years by the erosive action of the Gunnison River. The Gunnison River is formed by the confluence of the Taylor and East Rivers at Almont, Colorado, twelve miles north of the town of Gunnison. The name of the canyon is derived from two sources. One comes from the dark and gloomy twilight of the canyon bottom, due to the precipitous and towering walls of the relatively narrow gorge. Also, the canyon walls are of a dark color and are frequently banded and streaked. The canyon has been cut through an uplift of Precambrian rocks, including gneiss, schist, and granite. The usual covering of sedimentary rocks is missing in some places, having been eroded away, leaving exposures of granite along the rims. The north and south rims are only 1300 feet apart at the narrowest point and the canyon reaches a maximum depth of 2725 feet. The elevation varies from a high of over 8500 feet on Green Mountain along the northern boundary to below 5500 feet at the river near the northwest end of the monument.

The Black Canyon lies within the Woodland Zone of the Rocky Mountain Forest Complex. Three climax communities comprise most of the area within the monument. These are (1) the pinon-juniper woodland, (2) the scrub oak-serviceberry brushland, and (3) the grassland-sagebrush community. Scattered pockets of Douglas fir and aspen occur on north-facing slopes below the canyon rim. Other distinct habitats which support a different grass cover include the roadside banks and the canyon floor at the edge of the river. The scrub oak-serviceberry brushland is common on both rims; the pinon-juniper woodland is found at slightly higher elevations at the west end of each rim; and the grassland-sagebrush community is prevalent along the entrance road to the north rim.

The grass flora is characterized by scattered perennial bunchgrasses interspersed among the open woodland shrubs. Cheat grass, a weedy annual, is widespread along the margins of the roads and dominates the spring aspect. In the scrub oak-serviceberry brushland, Junegrass and squirrel-tail are co-dominants, supported by western wheatgrass and giant Columbia needlegrass. In the pinon-juniper woodland, needle-and-thread grass is the dominant with Indian ricegrass and Stipa pinetorum in abundance on the north rim. Squirraltail also frequents this community. In the Douglas fir-aspen community, Fendler's bluegrass is the dominant species, with bluebunch wheatgrass occurring sporadically. The rocky banks of the Gurnieon River are dominated by Marsh sully, growing in association with poison ivy. Redtop, northern reedgrass, and scratchgrass occur in sandy soil in the shade of ponderosa pines at the edge of the river.

The climax communities and the habitats represented within the monument are listed below with the grasses found most frequently in each.

Scrub oak-serviceberry brushland:

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Koeleria cristata
Sitanion hystrix
Agropyron smithii
Stipa columbiana var. nelsoni
Poa juncifolia
Poa pratensis
Agropyron desertorum
Oryzopsis hymenoides
Stipa lettermani

Pinon-juniper woodland: (south rim)

Stipa comata var. intermedia
Sitanion hystrix
Stipa lettermani

Pinon-juniper woodland: (North rim)

Oryzopsis hymenoides
Oryzopsis bloomeri
Sitanion hystrix
Stipa pinetorum
Stipa lettermani
Stipa comata var. intermedia
Poa secunda

Grassland-sagebrush community:

Bromus tectorum
Agropyron smithii

Douglas fir-aspen:

Poa fendleriana
Agropyron spicatum
Bromus ciliatus
Muhlenbergia racemosa
Oryzopsis micrantha

Roadside banks: (north rim)

Elymus cinereus
Agropyron decystachyum
Agropyron riparium
Bromus commutatus
Bromus inermis

Roadside banks: (south rim)

Bromus tectorum

Canyon floor in sandy soil under ponderosa pines at edge of Gunnison River:

Agrostis alba
Agropyron smithii
Calamagrostis inexpansa
Muhlenbergia asperifolia
Muhlenbergia racemosa

Canyon floor: open, rocky edge of river under willows:

Muhlenbergia racemosa

Thirty species of grasses were collected within the boundaries of the monument during the summer of 1963. These are listed below in alphabetical order accompanied by their most frequently applied vernacular names.

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|---|-----------------------|
| <u>Agropyron decystachyum</u> (Hook.) Scribn. | THICKSPIKE WHEATGRASS |
| <u>Agropyron desertorum</u> (Pisch.) Schult. | CRESTED WHEATGRASS |
| <u>Agropyron riparium</u> Scribn. & Smith | STREAMBANK WHEATGRASS |
| <u>Agropyron smithii</u> Rydb. | WESTERN WHEATGRASS |
| <u>Agropyron spicatum</u> (Pursh) Scribn. & Smith | BLUEDUNGH WHEATGRASS |
| <u>Agropyron trachyanlum</u> (Link) Malte | SLENDER WHEATGRASS |
| <u>Agrostis alba</u> L. | BIOTOP |
| <u>Bromus ciliatus</u> L. | FRINGED INCOME |

| | |
|---|----------------------------|
| <u>Bromus cicutatus</u> Schrad. | HAIRY CHESS |
| <u>Bromus inermis</u> Lecoq. | SMOOTH BROM |
| <u>Bromus tectorum</u> L. | DOONEY CHESS; CHEAT |
| <u>Calamagrostis innoxia</u> A. Gray | NORTHERN BEECHGRASS |
| <u>Elymus cinereus</u> Scribn. & Morr. | GIANT WILD-RYE |
| <u>Hordeum jubatum</u> L. | FOXTAIL BARLEY |
| <u>Koeleria cristatum</u> (L.) Pers. | JUDEGRASS |
| <u>Muhlenbergia asperifolia</u> (Bosc & Mey.) Parodi | SCRATCHGRASS |
| <u>Muhlenbergia racemosa</u> (Michx.) B.S.P. | MARCH HUHLY |
| <u>Oryzopsis bloomeri</u> (Boland.) Ricker | BLOOMER'S RICEGRASS |
| <u>Oryzopsis hymenoides</u> (Bosc. & Schult.) Ricker | INDIAN RICEGRASS |
| <u>Oryzopsis microantha</u> (Trin. & Rupr.) Thurber | LITTLELEAF RICEGRASS |
| <u>Poa fendleriana</u> (Steud.) Vasey | MUTTONGRASS |
| <u>Poa junifolia</u> Scribn. | ALKALI BLUEGRASS |
| <u>Poa pratensis</u> L. | KENTUCKY BLUEGRASS |
| <u>Poa zunicola</u> Nash | TIMBERLINE BLUEGRASS |
| <u>Poa secunda</u> Prool. | SANDBERG BLUEGRASS |
| <u>Sitanion hystrix</u> (Nutt.) J. G. Smith | SQUIRRELTAIL |
| <u>Stipa columbiana</u> var. <u>palmeri</u> (Scribn.) Hitchc. | GIANT COLUMBIA NEEDLEGRASS |
| <u>Stipa comata</u> var. <u>intermedia</u> Scribn. & Twedy | HEMLOCK-AND-THREAD GRASS |
| <u>Stipa lettermanii</u> Vasey | LETTERMAN NEEDLEGRASS |
| <u>Stipa pinstroica</u> N. K. Jomao | NEEDLEGRASS |

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Memorandum

To: Regional Director, Midwest

From: Superintendent

Subject: Natural History Research Performed by Dr. J. M. Rominger in Black Canyon of the Gunnison National Monument

Enclosed is a copy of the subject report written by Dr. Rominger in partial fulfillment of a contract to perform basic research on the grasses of Black Canyon in the Monument. Dr. Rominger collected, identified, mounted, and labeled 41 specimens which are now in the Black Canyon of the Gunnison National Monument herbarium.

We believe that Dr. Rominger did an excellent job on the project and proves that oftentimes minimal moneys can provide the initiative for getting basic research performed. Dr. Rominger's work will provide us with some good ecological data that will assist us greatly in our future interpretive programs.

We would like to express our appreciation to Regional Chief of Natural History Alberts for assisting us in arranging this small research program.

Incidentally, Dr. Rominger was impressed enough with working in Black Canyon of the Gunnison National Monument to apply for and receive acceptance as a Seasonal Naturalist in Grand Teton National Park for the 1963 season.

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