

ABUNDANCE AND DISTRIBUTION OF VASCULAR PLANTS
IN THE BIGHORN CANYON NATIONAL RECREATION AREA

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Objectives

This study began in 1983 and, as originally proposed, has three phases:

- 1) Floristic survey and herbarium development (1983-84);
- 2) Vegetation analysis and classification (1984-85); and
- 3) Conclusion of vegetation analysis and preparation of a vegetation map (1985-86).

This work is on schedule. Justification for the study was to provide the Bighorn Canyon National Recreation Area (BCNRA) with basic vegetation information that could be helpful in resource management. Very little ecological research has been conducted in the BCNRA.

Progress Report

Phase 1 has been completed, with approximately 500 plant specimens having been identified, mounted, and deposited in the Herbarium at the Lovell Visitor Center. A 51-page report entitled, "Checklist of vascular plants for the Bighorn Canyon National Recreation Area," has been sent to the Superintendent and is available to other interested persons. A total of 73 families of vascular plants have been found thus far in the BCNRA, with 320 genera and 656 taxa of specific or subspecific rank. In the Checklist, each species is coded to indicate abundance and habitat. Regional endemics are identified and the status of rare species is discussed.

Phase 2 is on schedule. During the summer of 1984, data on species composition and soils were collected from seventy stands, each about 1-2 hectares in size. The stands were selected to represent the full range of vegetation types within the BCNRA. Vegetation sampling consisted of listing the species present in the stand, estimating frequency and cover of herbaceous species and shrub seedlings in one hundred 20 by 50 cm quadrats, and estimating shrub cover from ten 40 m lines. We collected specimens of all unidentified species and will add these to the collection at the Lovell Visitor Center when they are identified and mounted.

Two soil pits were dug to a depth of approximately one meter in each stand,

and samples were collected from two depths. Slope, aspect, position on slope, proximity to water, geologic substrate, and depth to rooting zone were noted.

The influence of geologic substrate is especially apparent in the southern part of the recreation area, from Horseshoe Bend to the southern boundary. We identified a desert shrub type on river terraces and areas of Cretaceous marine shales. Sandstone formations support juniper and mountain mahogany vegetation types. Grassland vegetation, often with considerable sagebrush, occurs on a variety of substrates. Forests are found on the steep scarp face of East Pryor Mountain and are dominated by Douglas fir and some limber pine. There are several stands of relatively young trees on the Mountain, apparently the result of recent fires. We measured the diameters of over 200 trees on six transects through these stands and took increment cores from 100 trees. These cores will be used to date the fires which created the younger stands of forest.

The analysis of data collected in 1984 is now in progress, and the vegetation map has been started. Black and white aerial photographs were acquired for the entire BCNRA, and USGS orthophotoquads have been ordered. The Department of Geology at the University of Wyoming is collaborating by providing a zoom transfer scope, which enables vegetation boundaries visible on the photographs to be traced directly onto standard USGS maps.

During Phase 3 we hope to complete the vegetation map and a report presenting an analysis of the vegetation/environment relationships in the BCNRA. Additional data will be collected in 1985 and completion of the study is scheduled for the spring of 1986.