

INVENTORY OF PLANT SPECIES OF SPECIAL CONCERN
AND THE GENERAL FLORA OF DINOSAUR NATIONAL MONUMENT

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Field surveys during the second year (1988) of a botanical inventory of Dinosaur National Monument (DNM) concentrated in the Yampa River Canyon, its tributaries and selected adjacent uplands, and on Wild Mountain. Inventory efforts focused on areas not represented in historical collection records and on habitats with a high probability of supporting rare plant taxa. A museum research component was added to the study in the second year.

Objectives

Four objectives of the research project will assist park managers in management and protection of rare plants in Dinosaur National Monument.

1. Complete a systematic botanical inventory of the Monument to document threatened, endangered, and special concern plant species.
2. Prepare a checklist of the flora of the Monument, compiled from field work, published literature, and museum sources.
3. Provide DNM with a relatively complete set of verified plant specimens for inclusion in the monument herbarium.
4. Provide baseline data and management recommendations for use in plant resource and natural area conservation, management, and research in the monument and within the region.

Dinosaur National Monument represents a unique conservation and management opportunity within the Uinta Basin and can be viewed regionally as an island surrounded by areas with similar bio-ecological characteristics, but different uses.

Methods

The 1988 field inventory was conducted at planned intervals to maximize representation of plant species with differing phenologies:

May 16-25	Yampa River and side canyons
June 6-10	selected areas on Blue and Douglas Mountains
June 27 - July 1	Wild Mountain
August 30 - September 5	miscellaneous (Bull Canyon, Harding Hole, Deerlodge Park, & Green River above Yampa confluence).

Field surveys were conducted by one botanist accompanied by a technician or by two botanists working independently. The areas surveyed in 1988 presented greater logistical challenges than areas surveyed in 1987 due to remoteness, topography, and/or transportation constraints. Potential habitat was reviewed prior to establishing daily transect routes using aerial photographs, geologic maps, topographic maps, and a list of taxa expected in the area. Unusual geologic exposures, topographic conditions, soils, hydrologic regimes, and vegetation having the greatest potential for containing rare taxa were examined in detail. Transects were designed to maximize coverage of diverse geologic formations and vegetation types. Areas examined were delineated on USGS 7.5 minute topographic maps. A base map (1:62,500) was prepared showing daily transects, rare plant locations, and high-quality vegetation sites.

Forty-five rare plant species were targeted in the 1987 and 1988 surveys. These were identified from published sources, museum records, and consultation with knowledgeable botanists. Habitat profiles were developed based on existing data to assist in locating the plants in the field. Twenty-eight of these taxa had been documented in Dinosaur National Monument prior to the 1988 field season; 16 were encountered during the 1987 survey. The remainder had been documented from adjacent areas within the Uinta Basin.

Standard plant collecting techniques were used. Data from the first year of the study were used to concentrate collection efforts on taxa unrepresented or under-represented in regional herbaria. A complete set of specimens will be deposited at Dinosaur National Monument. Duplicates were selectively collected in the second year of the study for disposition to the University of Colorado (COLO), Colorado State University (CS), Brigham Young University (BRY), and Rocky Mountain Herbarium (RM). Specimens were verified and processed at Colorado State University. Nomenclature follows Goodrich and Neese (1986).

A dBASE III database file was developed to accommodate new collection records generated by the present study as well as historical museum records. Research trips to herbaria at Brigham Young University and Utah State University (1 week at each institution) were made to examine historical collections from Dinosaur National Monument. Data from these

collections were added to the computer file. A copy of the database will be made available to the monument for curation and resource management purposes.

Results

Three hundred twenty-three collections representing approximately 215 taxa and 549 specimens were made during the 1988 field season. Significance of these collections will be determined when analyses of 1988 collections and historical herbarium records are complete. Eleven of the taxa collected in 1988 are of special concern to the state of Colorado. Four of these are rare throughout their range or have an extremely limited distribution. Four are periferal or disjunct in Colorado, but are more common elsewhere within their range. Three appear to be rare in Colorado and/or Utah, but conclusive data are lacking. Forty-four rare plant localities were mapped during the 1988 field season.

Regional herbarium research trips yielded 150 collections from Dinosaur National Monument at Brigham Young University and 102 at Utah State University. Museum collections documented by Graham (1937) and housed at the Carnegie Museum are being compiled for addition to the database, ensuring the most complete historical record of the flora of Dinosaur National Monument. An additional trip to Brigham Young University and a trip to the University of Colorado are planned for 1989 to complete the museum component of the survey. The database compiled from museum specimens and collection records from the present study will serve as the basis for a checklist of the Dinosaur National Monument flora.

One thousand-twenty mounted plant specimens collected during the 1987 field season were delivered to Dinosaur National Monument. Approximately 320 specimens collected during the 1988 field season will be delivered when processing is complete. These specimens represent a substantial addition to the Dinosaur National Monument herbarium and will serve as a valuable reference tool for park managers and interpreters.

Several high-quality vegetation sites were examined, including the lower reaches of Johnson Canyon, which was proposed as a Research Natural Area in the January 1, 1988 Progress Report. Observations in lower Johnson Canyon confirm its importance as a relatively undisturbed example of a canyon ecosystem and rare plant habitat. Other areas of significance include lower Starvation Valley for high-quality riparian vegetation, and Warm Springs Cedars for mature pinyon-juniper woodland with a relatively undisturbed understory (including cryptogams).

Conclusions

Management recommendations will be made based on the completed analysis

of data collected in 1988. Most of the rare plants in Dinosaur National Monument require little or no active management. The database and maps produced will assist the park in facilities placement planning and ensure the survival of Dinosaur National Monument's rare plant resources. Identification of significant natural areas in the monument will provide managers with baseline areas for use in comparative evaluations of conservation, active management, and restoration projects within the park.

Literature Cited

- Goodrich, S. and E. Neese. 1986. Uinta Basin flora. For. Serv., Intermtn. Region, USDA. 320 pp.
- Graham, E. H. 1937. Botanical studies in the Uinta Basin of Utah and Colorado. Annals of the Carnegie Mus. 26:1-432.