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A COMPARISON OF NATIVE VEGETATION WITH THAT
FOLLOWING CULTIVATION IN AZTEC RUINS NATIONAL MONUMENT

by

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Aztec Ruins National Monument is located in San Juan County, northwestern New Mexico, in the valley of the Animas River. The maximum elevation of the monument is 5642.4 feet which places it in the Upper Sonoran life zone. The area is in a semi-arid region where the rainfall averages six inches per year and the cultivation of most crops would not be possible without irrigation. The most common vegetation along the river bottom is the broad-leaved cottonwood (*Populus Wislizenii*) and willow. Clematis, buffalo berry (*Shepherdia Argentea*) and ^{lemon bush} skunk brush (*Rhus Trilobata*) are also abundant.

On the first terrace above the river bottom one commonly finds black sage (*Artemisia Tridentata*), rabbit brush (*Chrysothamnus* sp.) saltbush (*Atriplex canescens*) and greasewood (*Sarcobatus Vermiculatus*). All irrigable land on this terrace has been cleared and is now under cultivation. This farming land is bordered by boulder-covered hills which recede into hills of clay and shale often capped by sandstone bluffs. Here the predominate vegetation is juniper and pinyon on the slopes and ridges with sage brush in the gullies.

Aztec Ruins National Monument occupies 25.88 acres on the first terrace above the river bottom. The monument was once part of a homestead that was filed about 1889, but the irrigable portion now included in the monument was first cultivated in 1882. Corn was the first crop planted on the raw land and this was followed by a planting of alfalfa. After two or three

seasons the alfalfa was plowed up, corn was again planted and these two crops were rotated as long as the area was cultivated. In 1923 President Harding issued a proclamation which set aside the Aztec Ruins National Monument, and since that time cultivation has been restricted. The area that lies between the main ruin and the south boundary has been landscaped and irrigation continued. Chinese elm and poplar



Fig. 1 The irrigated area between main ruin and south boundary

trees have been planted and in the spring of 1937 mixed grass seed was liberally scattered on the snow. The remainder of the area cultivated has been allowed to lie fallow and undisturbed except for times when the weeds were cut.

The purpose of this paper is to compare the native vegetation with that to be seen since the area was cultivated and cultivation later restricted. It is realized that there are several factors affecting the present vegetation which cannot

be definitely evaluated. Farms immediately adjoining the monument are under cultivation and waste irrigation water from them crosses the monument. This no doubt is the source of some of the present plants. Mixed grass seeds scattered on the snow or foreign seeds included in the alfalfa that was planted may be other sources. However attention is directed mainly to the native plants which appear to be re-establishing themselves since cultivation has been restricted.

Specimens were collected during the latter part of September and early October in 1940 just before the first frost. The collection represents those plants blooming late and the ones with a prolonged blooming date but does not include those blooming early such as evening primrose (*Pachylophus macroglottis*), *Corydalis aurea*, *Phacelia corrugata*, and several legumes and Cruciferae.

The specimens accompanying this paper have been divided into two groups: (A) Native plants (B) Plants probably introduced through the agencies of cultivation. In relating the various plants to their proper group, consideration has been given not only to the plants now to be seen growing on the monument, but also to areas seldom disturbed by cultural influences. For example: ^{western} ~~hoarhound~~ (*Lycopus Americanus*) might be considered a plant introduced through cultivation, but it has been observed in Chaco Canyon National Monument far distant from any place where there has even been any cultivation within historic times. On the basis

of this wider perspective, the plants judged to be native are:

SCIENTIFIC NAME	COMMON NAME
1. <i>Chrysothamnus Parviflorus</i> Varis	Rabbit Brush
2. <i>Sarcobatus Vermiculatus</i>	Greasewood
3. <i>Artemisia Tridentata</i>	Sagebrush
4. <i>Artemisia Frigida</i>	?
5. <i>Gutierrezia Microcephala</i>	Gutierrezia
6. <i>Sidalcea Neo-Mexicana</i>	Mallow
7. <i>Lycopus Americanus</i>	Hourglass
8. <i>Cleome serrulata</i>	Rocky Mountain Bee Plant
9. <i>Atriplex Canescens</i>	Saltbush



Fig. 2.
Rabbit Brush-
Chrysothamnus
parviflorus Varis.



Fig. 3.
Greasewood-
Sarcobatus
vermiculatus



Fig 4.
Sagebrush-
Artemesia
Tridentata

Fig 5. Saltbush - Atriplex
Canescens

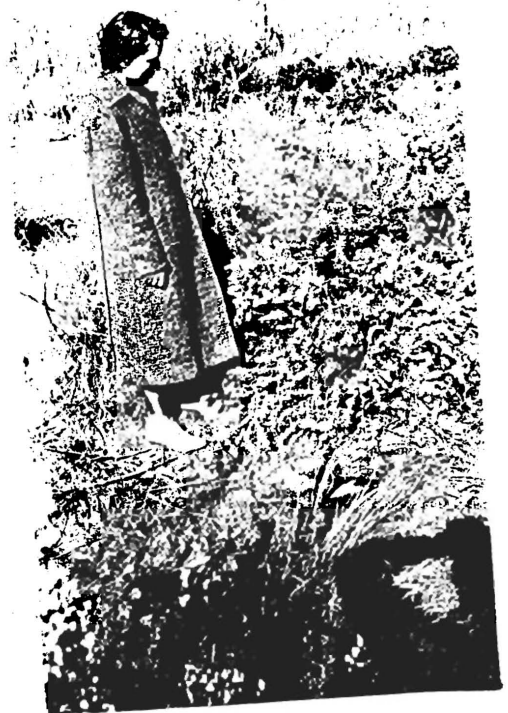


Fig 6.
Cleome - rocky
Mountain Bee Plant.



The plants probably introduced through the agencies of cultivation are:

SCIENTIFIC NAME	COMMON NAME
10. Salsola Pestifer	Russian Thistle
11. Malva Rotundifolia	Mallow or Cheeses
12. Tragopogon Pratensis	Salsify or Oyster Plant
13. Cenchius Tribuloides	Sand Bur
14. Solidago Canadensis	Goldenrod
15. Taraxacum Officinale	Dandelion
16. Plantago - sp. ~~lanceolata~~	Plantain
17. Plantago Major	Plantain
<i>we</i> 18. Euphorbia Montana X	Spurge
19. Polygonum Amphibium	Smartweed
20. Medicago Sativa	Alfalfa
21. Melilotus Officinalis	Yellow Sweet Clover
22. Melilotus Alba	White Sweet Clover
23. Physalis Neo-Mexicana	Ground Cherry
24. Salix Sub ~~co~~ ^{er} erulea	Willow
25. Asclepias Speciosa	Milkweed
26. Erodium Cicutarium	Alfilaria or Pin Clover
27. Tribulus Terrestris	Puncture Vine
28. Gaura Neo-mexicana	? <i>Gaura</i>
29. Amaranthus Retroflexus	? <i>pigweed</i>
30. Mentha Canadensis	Mint
31. Helianthus Annus	Sunflower

The aridity of the region makes irrigation a limiting factor in determining the vegetation present. It will be noted that most of the plants collected on the unirrigated area were

perennials while those from the irrigated area were annuals. Considerable variation was noticed in two successive summers with approximately the same amount of irrigation. During the summer of 1939 Gaura Neo-Mexicana grew rank and abundant on the irrigated area but very little was noticed during the summer of 1940. Both white and yellow blossom sweet clover were common in 1940 yet seldom seen in 1939.

The least seasonal variation was seen in the area now unirrigated. All of the native vegetation (listed elsewhere) shows evidence that it is re-establishing itself. More sage is present than any other perennial, perhaps because it is more adaptable to variations in moisture. Saltbush and ^{snakeweed} gutierrezia are becoming well-established and a few grease-wood plants are present.

Cleome, the only annual listed among the native plants, is abundant. It requires very little water and is usually able to mature some seed regardless of the annual rainfall.

Russian thistle is listed with the plants probably introduced through cultivation, but it is now abundant on the non-irrigated area. This plant is widely distributed in New Mexico and its size here as elsewhere varies according to the amount of moisture available. However, the plant will not withstand much moisture and is seldom seen on the irrigated area.

It is expected that in the unirrigated area the native vegetation will, in time, completely re-establish itself. No doubt some plants will continue to be carried over from the period of cultivation, but these will gradually be eliminated

Plentiful
Plants
(1940)

by the sage, greasewood, rabbit brush, and other more aggressive plants. This is in keeping with the aim of the National Park Service to maintain the vegetation in the areas under their jurisdiction in the most natural conditions possible.