

Vegetation Map of Bent's Old Fort  
National Historic Site,  
Colorado

Final Report

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## ABSTRACT

Aerial photography and ground truthing were used to map the vegetation of Bent's Old Fort National Historic Site. Generally, dominant and other common species are listed for each vegetation type identified on the photograph or in the field. A map was produced using a Geographic Information System and is included with numbered vegetation types corresponding to numbered descriptions in the text.

## INTRODUCTION

The purpose of this project was to map the vegetation of Bent's Old Fort. An aerial photograph of the area was examined and vegetation types were delineated on an acetate overlay. Polygons delineated on the overlay were digitized into a Geographic Information System (Atlas GIS) to produce the map. General descriptions of each type were produced from ground truthing during the summer of 1993.

## STUDY AREA

Bent's Old Fort National Historic Site is located approximately 7 miles east-northeast of La Junta, Colorado, along the Arkansas River. Natural vegetation of the area is generally shortgrass prairie on the uplands and cottonwood woodlands and willow shrublands in the riparian areas. Topography is gently rolling and the elevation is approximately 1220 meters (4000 feet).

## METHODS

Vegetation types were delineated on the NAPP color infrared aerial photograph of the area (1988 photo number 972-180 enlarged to 36 inch size). Polygons delineated on the overlay were digitized into a Geographic Information System to produce the map. General descriptions of each type were produced from ground truthing. Ground truthing was done at two different times during the summer of 1993. Because of time constraints we were unable to ground truth every vegetation type delineated on the aerial photo, therefore some polygons are unlabeled and vegetation type numbers are not consecutive. A Global Positioning System (GPS) was used during the ground truthing to accurately locate as many of the vegetation types as possible. The two delineations were then reconciled and corrected where necessary.

During the ground-truthing process most vegetation types were visited. For each vegetation type visited, dominant and common species were noted. Actual plot or transect measurements were not taken because of the patchy nature of the vegetation. Invasive exotic species were present in most of the vegetation types. In most cases the vegetation was a mosaic of small patches of native vegetation with patches of exotic species.

Species listed as dominant have canopy cover values ranging from 10-50%. A complete species list within each vegetation type was not compiled.

## RESULTS

Descriptions for numbered and lettered polygons are described below. Scientific and common names are listed in the appendix. Nomenclature follows Harrington, H. D., Manual of the Plants of Colorado, Sage Books 1954, and Weber, W. A., Rocky Mountain Flora, Colorado Associated University Press, Boulder, Colorado, 1976.

AG - agricultural fields

B - bare sand or silt bars along the river

PA - visitor parking area

RR - railroad

### Vegetation Type 1:

Sand dropseed (Sporobolus cryptandrus) and burning bush (Kochia scoparia) dominated this stand of vegetation. Other common species were bindweed (Convolvulus arvensis), bottlebrush squirreltail (Sitanion hystrix), and buffalograss (Buchloe dactyloides).

### Vegetation Type 2:

Essentially the same as Vegetation Type 1 except bottlebrush squirreltail was less common in this type.

### Vegetation Type 3:

Sand dropseed and buffalograss dominated this stand. Other common species were burning bush, bindweed, and blue grama (Bouteloua gracilis).

### Vegetation Type 4:

Buffalograss dominated this stand. Other common species were sand dropseed, blue grama, and burning bush.

### Vegetation Type 5:

Burning bush and sand dropseed dominated this stand. Other common species were buffalograss and blue grama.

### Vegetation Type 6

Similar to vegetation type 5 except burning bush was more dominant.

Vegetation Type 7:

Burning bush dominated this stand.

Vegetation Type 8:

The area surrounding the fort is dominated by various native and exotic weeds.

Vegetation Type 9:

Narrow-leaved cat-tail (Typha latifolia) heavily dominated this stand. Numerous other species were common around the edge of the cat-tail marsh including bulrush (Scirpus), galingale (Cyperus), and sedge (Carex).

Vegetation Type 10:

Salt cedar (Tamarix pentandra) formed a very dense but narrow stand of vegetation directly adjacent to the Arkansas River.

Vegetation Type 11:

Coyote willow (Salix exigua) formed a very dense, but narrow stand of vegetation directly adjacent to the Arkansas River.

Vegetation Type 12:

Plains cottonwood (Populus deltoides) dominated this stand of vegetation. Salt cedar formed an almost impenetrable shrub layer.

Vegetation Type 21:

This area was an old point bar on the river that was sparsely vegetated with salt cedar and coyote willow.

Vegetation Type 22:

Mature plains cottonwood dominated this stand. Various forbs and graminoids were important understory components including burning bush, horsetail (Conyza canadensis), sunflower (Helianthus), wild licorice (Glycyrrhiza lepidota), sand dropseed, and saltgrass (Distichlis stricta).

Vegetation Type 23:

Saltgrass heavily dominated this stand.

Vegetation Type 24:

Plains cottonwood small trees and saplings dominated this stand. Coyote willow occurred in moderate amounts.

Vegetation Type 25:

This stand was dominated by salt cedar.

Vegetation Type 26:

This stand contained various age classes of plains cottonwood and patches of salt cedar. Common forbs and graminoids were wild licorice, ragweed (Ambrosia), western wheatgrass (Elymus smithii), galleta grass (Hilaria jamesii), saltgrass, and vine mesquite (Panicum obtusum).

Vegetation Type 27:

This stand was dominated by sparse cover of plains cottonwood and salt cedar.

Vegetation Type 28:

Dense salt cedar dominated this stand.

Vegetation Type 29:

This stand was similar in composition to Vegetation Type 27 except the vegetation was generally less dense.

Vegetation Type 30:

This area appeared to be an old pasture and had a large number of weedy species.

Vegetation Type 31:

These areas appeared to have been cultivated at one time and contained a large number of weedy species.

Vegetation Type 32:

This stand was dominated by sand sage (Artemisia filifolia) and blue grama.

Vegetation Type 33:

This area appeared to be an old pasture and had a large number of weedy species. An active prairie dog colony exists at the northeast end of this area.

Vegetation Type 34:

Salt cedar dominated this stand but was scattered and did not form a dense canopy.

Vegetation Type 35:

Salt cedar formed a dense impenetrable shrub layer in this stand.

Vegetation Type 36:

Salt cedar formed a dense impenetrable shrub layer in this stand. Plains cottonwood occurred in occasional small patches.

Vegetation Type 37:

This area was sparsely vegetated with salt cedar. Much of the area was bare sand with very little vegetation.

Vegetation Type 39:

This stand was dominated by plains cottonwood and occasional bands of salt cedar. The salt cedar usually occurred on slightly higher (drier) surfaces. Western wheatgrass and saltgrass were the dominant understory species.

APPENDIX

Trees:

Populus deltoides plains cottonwood

Shrubs:

Artemisia filifolia sand sage  
Salix exigua coyote willow  
Tamarix pentandra salt cedar

Forbs:

Ambrosia ragweed  
Convolvulus arvensis bindweed  
Conyza canadensis horsetail  
Glycyrrhiza lepidota wild licorice  
Helianthus sunflower  
Kochia scoparia burning bush

Graminoids:

Bouteloua gracilis blue grama  
Buchloe dactyloides buffalograss  
Carex sedge  
Cyperus galingale  
Distichlis stricta saltgrass  
Elymus smithii western wheatgrass  
Hilaria jamesii galleta grass  
Panicum obtusum vine mesquite  
Scirpus bulrush  
Sitanion hystrix bottlebrush squirreltail  
Sporobolus cryptandrus sand dropseed  
Typha latifolia narrow-leaved cat-tail

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Prepared by the Colorado Natural Heritage Program.  
Map based on 1988 NAPP color infrared aerial photo.

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