

# White Rock Canyon and its Riparian Areas

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## **Introduction**

The arid Southwest is interrupted here and there by stream or an entirely different flora from their immediate surroundings. White Rock Canyon below the Jemez Mountains' Pajarito Plateau west of Santa Fe is a particularly interesting example because it is at somewhat of a boundary between northern and southern, eastern and western native plants. As such it may represent the extreme extension of several species. The better-studied Bandelier National Monument immediately to the south would be a logical location for such a study were it not for the fact that its entire riparian region adjacent to the Rio Grande was deeply submerged by the extremely high water behind Cochiti dam in the mid-1980's. Native plants in the splendid outflow areas of Frijoles and Alamo creeks were largely destroyed and replaced by invasive, weedy, and often non-native species. True, Bandelier contains good riparian habitat above the level of the flooding, but most of that is under ponderosa and so has a more forested character. To the north of White Rock Canyon the land has been increasingly disturbed by habitation. Thus, in addition to its rugged slopes, benches and sand flats, White Rock Canyon between Ancho and Pajarito creeks is worth study as an example of open riparian habitat in the region.

Finally, given recent discussions about possible reintroduction of desert bighorn sheep into White Rock Canyon, it seems prudent to complete a floristic inventory of the area.

## **Overview of the Area**

The White Rock Canyon Study Area (WRCSA) comprises the land bounded by the Rio Grande on the east, Pajarito Creek on the north, and Ancho Creek on the South, a distance along the river of approximately 3.0 miles (Figure 1 USGS map, Figures 2 & 3 Hoard topo-sketches). In addition to these two perennial creeks the strip is crossed by several intermittent washes such as that from Water Canyon, and by a small spring 1/4 mile north of Water Canyon that maintains a narrow marshy riparian corridor of remarkable plant diversity. There are also several seeps (or at least moist areas) that support additional diversity. In addition to the riparian habitats the area includes steep rocky slopes, broad, mud and sand flats, bosques, gravelly hills and ravines (in two of these was found the plains species, *Dalea aurea*) and benches of interspersed lava rocks and soil, also supporting a characteristic variety of plant life. The partial list at the end of gives some idea of this.

## *Access*

The study area is roughly 850 feet below the rim of the canyon and is accessed by trails down to the two creeks: Ancho (3.2 miles from St. Rt. 4) and Pajarito (1.5 miles from Piedra Loop, La Senda). There are no easy routes between the rim and the Rio in between these trails. It is perhaps the remoteness of this area that has protected much of its plant life, although it is clear that the area was grazed for years until the late 1970s.

### *Pajarito Spring and Creek*

Pajarito spring flows from the bottom of a basalt cliff some 150 ft above and about 3/4 mile from the river. The area surrounding the spring is quite moist and produces a dense growth of trees (Hackberry, Box Elder, Cottonwood, Coyote willow, Privet, Piñon, and Juniper), and shade-loving plants (Epipactis gigantea, Grape-Vitis arizonica, Oxypolis fendleri, Erigeron philadelphicus, etc.). The spring quickly becomes a sunny creek with many plants crowding in on it (Rorippa nasturtium aquaticum, Helenium autumnale, Lobelia cardinalis, Bidens cernua) and others responding to the general moist soil adjacent to it (Draba reptans, Penstemon jamesii and barbatus, Androsace occidentalis, Aster ericoides and commutatus). At the Rio, where it was briefly submerged by Cochiti Lake, a new growth is evident (Tamarisk, Apocynum cannabinum, Baccharis salicina/emoryi (the author is not aware of this shrub occurring along the Rio north of here).

### *Ancho Creek*

This nearly-perennial stream (perhaps truly perennial in its lower reaches as evidenced by the new beaver dam across it about a quarter mile upstream from the Rio) begins about a mile in from the Rio (although its length varies with seasonal moisture). In the mid-1980s, Cochiti Lake inundated about 100 yards of flats at its confluence with the Rio Grande which shows the result with dead juniper trees and broadcast disturbed-soil plants (Descurania sophia, Lappula redowskii, and others). Because of its generally high banks, the rest of the three-mile stretch of the Rio Grande was not flooded significantly and remains relatively untouched excepting for signs of Native American habitation and more recent cattle grazing. Apparently no significant grazing has been done on this land for the past 15 years or so (although a few seem to cross the Rio into it at low water).

### *Water Canyon Spring*

About a quarter mile north of the Water Canyon delta (and ephemeral stream) is a spring (not marked on the USGS map). It arises in a steep ravine about a few hundred yards from the Rio and flows in a nearly straight line to the river. For most of its length the water is obscured by a dense covering of plant life (Rorippa nasturtium aquaticum, Veronica americana, Sisyrinchium demissum, potentilla anserina, juncus tenuis, etc.). This is perhaps the most interesting part of the WRCSA with its own special flora--an unlooked-for ribbon of green crossing sandy, semi-arid flats and harboring riparian species not seen along the other two streams.

### **Acknowledgments**

Several people have helped with the plant survey. My wife, Yvonne, and Becky Shankland have accompanied me on several trips making suggestions, helping not only with plant identification, but photography and collecting. Mary and Steve Whitmore, and Dave and Alice Fehlau went on the May 25th NPS hike. Finally, Roger Peterson and George Cox accompanied me on July 10. In addition to assistance with many species and nomenclature, they did all the identification of the grasses. The sketches of the canyon topography were done by Dorothy Hoard and taken from her book, "Los Alamos Outdoors".

**General List of Native Plants occurring  
at the  
White Rock Canyon Study Site**

- The list is divided into several sections: plants will be classified as occurring:
- canyon habitat (C), well away from the creeks  
subdivided into:

- sandy flats Cf
- steep hillsides Ch
- rock-dirt benches Cb

- near riparian (Nr), areas near the creeks probably influenced by the stream

- Ancho creek Nr-a
- Water cañon spring Nr-s
- Pajarito creek Nr-p

- riparian (R) : species found in or immediately adjacent to the creeks themselves.  
subdivided into areas along:

- the Rio Grande Rr
- Pajarito creek Rp
- Water Canyon seep Rs (spring-fed, marshy area north of Water Canyon)
- Ancho creek Ra
- Spring, bottom Blue dot Rb

**Aceraceae**

Acer	negundo	Rp
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**Apiaceae**

Oxypolis	fendleri	Rp, Ra
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**Anacardiaceae**

Rhus	radicans	Rp
	trilobata	Cf,h,b

**Asclepiadaceae**

Asclepias	asperula	Cf,b
	invoucrata	Cf
	*macrotis	Ch Uncommon
	subverticulata	Cf
	*englemanniana	Rr Out of Range

**Asteraceae**

Ambrosia	artemisifolia	
Ambrosia	psilostachya	Cf
Artemisia	bigelovii	Cb
	draculculus	Cf,h,b
	filifolium	Cb
	lucoviciana	Cf,h,b Nr--a
	tridentata	Cb
Aster	ericoides	Nr
	exilis	?
	fulcatus var commutatus	Nr
Baccharis	*salicina/emoryi	Rp,Rw Northern most occurrence
Bahia	dissecta	Cf
Baileya	*multiradiata	Ch Northern most occurrence
Berlandiera	lyrata	Cf,b Ra
Bidens	cernua	Rp
	frondosa	Rp
Brickkellia	californica	Ch
	brachyphylla	Ch
Chrysothamnus	nauseosus	Cb
Cirsium sp.	undulatum?	
Conyza	canadensis	
	parryi	Cf
Erigeron	aphanaectis	Cf
	bellidiastrum	Cf (sand)
	colo-mexicanus	Cf,h,b
	divergens	Cf,h,b
	flagellus	
	*philadelphicus	Rp Out of Range
Euthamia	occidentalis	Rr

Gaillardia	pinnatifida	Cb
Grindelia	aphanactis	Cf
Gutierrezia	sarothrae	Cf
Helenium	autumnale	Rp
Heterotheca (Chrysopsis)	villosa	Cf,h,b
Hymenoxis	argentea	Cf,h,b
	richardsonii	Cf,h,b
Hymenopappus	filifolium	Cb
	flavescens	Cf,b
Leucelene (Chaetopappa)	ericoides	Cf,b
Machaeranthera (Happlopapps)	spinulosa	Cf,b
	tanacetifolia	Cb
Malacothrix	fendleri	Cf
Pyrrhopappus	multicaulis	Nr
Ratibita	columnifera	Rr
	tagetes	Nr-p, Rr
Scorzonera/ (Podosperma )	laciniata	Cf
Senecio	flaccidus	Cf,b
Senecio/Packera	neomexicanus	Cf
Solidago	canadensis	Rs
Sonchus	asper	Nr-s
Stephanomeria	pauciflora	Cf,b
Thelesperma	filifolium	Nr-a
	megapotamicum	Cf,b
Taraxacum	officianale	Ra
Townsendia	exscapa	Cf
	fendleri	Cf
	incana	Cf
Trogopogon	dubius	Cf
Xanthium	strumarium	Nr-a,s
<b>Boraginaceae</b>		
Cryptantha (Oreocarya)	jamesii	Cf,h,b
	crassasepela	Cf
Lapula	redowskii	Cf Nr-a
	squarrosa	Ra,a (disturbed ground Ancho rapids)
Lithospermum	incisum	Ch Nr-a
<b>Brassicaceae</b>		
Arabis	fendleri	Ch,Nr
Cardamen	cordifolia	Rs
Cardaria	chalepensis	Cf (Water Canyon outflow)
Descurania	sophia	Disturbed Ground at Ancho rapids
	richardsonii	Ch
Draba	reptans	Nr,p
Dithyrea	wislizenii	Cf
Erysimum	capitatum	Cb Ra
Lepidium	virginicum var. medium	Ch,b Ra

Rorippa	nasturcium aquatica	Ra,s,p	
	microphyla	Ra,p	
Sisymbrium	altissima	Nr-a	
Streptanthella	longirostris	Cf (Water Canyon outflow)	
Thelypodium	wrightii	Nr-a	Ra

### **Cactaceae**

Echinocereus	coccineus	Cf,h,b	New name
	fendleri	Cf	
	triglochidiatus	Cf,h,b	
	viridiflorus		Ch Nr-a
Escobaria	vivipara		
Opuntia	imbricata	Cf,b	Nr-a
	polyacantha	Cf,b	
	phaeacantha	Cf	

### **Campanulaceae**

Lobelia	cardinalis	Rp	Rare
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### **Caryophyllaceae**

Cerastium	glomeratum/viscosum	Rs	
Silene	antirrhium	Cf	

### **Chenopodiaceae**

Atriplex	canescens	Ch,b	
Corispermum	spp.	Cf (sand)	
Chenopodium	glaucum	Cf	Nr,s
	album		
	incanum	Cf	
	leptophyllum		
Corispermum	sp.	Cf (sand)	
Eurotia	lanata	Ch,b	

### **Commelinaceae**

Tradescantia	occidentalis	Cf	
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### **Convolvulaceae**

Convolvulus	arvensis		
Evolvulus	sericeus	Ch,b	

### **Cyperaceae**

Carex	emoryi		
Carex	praealtus., Sedge	Nr-p	
Cyperus	feruginescens, Bulrush		
Eleocharis	palustris (?), Spikerush		
Scirpus	pungens, Bullrush		

**Cupressaceae**

Juniperus monosperma, One-seeded Juniper

**Dipsacaceae**

Dipsacus fullonum Rs

**Equisetaceae**

Equisetum arvense Rp

laevigatum Rp

**Euphorbiaceae**

Croton texensis Cf

Euphorbia brachycera Cf,b

dentata Cf

fendleri Cf,h,b

Tragia nepetaefolia/ramosa? Ch,b

**Fabaceae**

Amphora fruticosa Rr

canescens?? Rr

Astragalus ceramicus Cb

flexuosus Cf,h,b

lentiginosus Cf

lotiflorus Cf

nuttalianus Cf,h,b

missouriensis Cf,b

praelongus Cf

Dalea aurea Cf (ravine in low hills) Out of Range

brachystachys Cf

candida Cf

cylindriceps Cf Nr-p

formosa Cf (ravine in low hills)

jamesii Cf

lanata Cf

nana Rr

purpurea

Glycyrrhiza lepidota Nr-r

Lotus wrightii Cf,b

Lupinus brevicaulis? Cb

kingii var. kingii Cf

pusillus

Medicago lupulina

Melilotus officinalis Cf, Rp

candida Ra

Psoralegium lanceolatum Ch

Robinia neomexicana Cf

Sophora nuttaliana Ch,b

Trifolium pratense Rp

Vicea	exigua	Ch,b
<b>Fagaceae</b>		
Quercus	gambelii	Cf,h,b
	undulata	Ch,b
<b>Fumariaceae</b>		
Corydalis	aureus	Ch,b Ra
<b>Grossulariaceae</b>		
Ribes	cereum var. pediculare	Rp Nr--a,p
	inermis,	Nr-s
	leptanthum	Cf (Water Canyon outflow)
<b>Hydrophyllaceae</b>		
Phacelia	integrifolia	Ch
<b>Iridaceae</b>		
Sisyrinchium	demissum	Rs
<b>Juncaceae</b>		
	Juncus tenuis, Rush	
<b>Lamiaceae</b>		
Hedeoma	nanum	Ch
Lycopus	americanus	Cb
Monarda	fistulosa var. menthifolia	Nr-p
Prunella	vulgaris	Ns
<b>Lemnaceae</b>		
	Lemna minor	Rp\
<b>Liliaceae</b>		
Calochortus	nuttallii	Cb
Yucca	baccata	Cf,b
	angustissima	Cf
<b>Linaceae</b>		
Linum	puberulum	Cb
	aristatum var. australe	Cf,b
	spp. w orange center?	Cb
	rugosum	Cb May 2005 range extention
<b>Loasaceae</b>		
Mentzelia	nuda var. stricta	Cb
	aristatum var. australe	Cb
	*pumila var. stricta / springeri	Ch Endemic
<b>Malvaceae</b>		



Sphaeralcea	cocinnus fendleri hastata var fendleri	Cf,h,b Ch Nr-r Ch Nr-r	
<b>Moraceae</b>			
Morus	alba, White Mulberry	Nr-r	
<b>Nyctaginaceae</b>			
Mirabilliis	linearis oxybaphoides multiflora	Nr-p Cf,b Cf	
<b>Oleaceae</b>			
Forestiera	neomexicana	Rp	
<b>Onagraceae</b>			
Epilobium	ciliatum	Ra,s	
Gaura	coccinea parviflora	Ch Cf	
Oenothera	coronopifolia caespitosa elata, Hooker Evening Primrose albicaula pallida	Cf Ch Cf Cf	
<b>Orchidaceae</b>			
Epipactis	*gigantea	Rp	Endemic
<b>Orobanchaceae</b>			
Orobanche	ludoviciana (?)	Cb	
<b>Pinaceae</b>			
Pinus	edulis	Cf,b	
<b>Plantaginaceae</b>			
Plantago	patagonica	Cf	
<b>Poaceae</b>			
	Agropyron cristatum, Crested Wheatgrass		
	Agrostis stolonifera, Creeping Bent		
	Aristida purpurea, var. longiseta, Red Three-awn		
	Aristida purpurea, var. nealleyi, Nealley's Three-awn		
	Bothriochloa laguroides, Silver Bluestem		
	Bouteloua curtipendula, Side-oats Grama		
	Bouteloua eriopoda, Black Grama		
	Bouteloua gracilis, Blue Grama		
	Bouteloua hirsuta, Hairy Grama		
	Bromus japonicus, Japanese Brome		
	Bromus tectorum, Cheat Grass		

Cenchrus incertus		
Dactylus glomerata, Orchard Grass		
Dasychloa/Erioneuron, pulchella	Cf	
Dicanthelium oligosanthes var scribnerianum, Scribner's Rosettegrass		
Distichlis spicata, Salt Grass		
Elymus canadensis, Canada Wild rye		
Elymus smithii, Western Wheatgrass		
Epineuron (Tridens) pilosus, Hairy Tridens		
Eragrostis pectinacea lovegrass		
Festuca arundinacea, Tall Fescue		
Glyceria striata, Fowl Mannagrass		
Hilaria jamesii, Galleta		
Hordeum jubatum, Foxtail Barley		
Muhlenbergia, asperiflora	Rb	
Muhlenbergia repens, Creeping Muhly		
Muhlenbergia porteri, Bush Muhly		
Muhlenbergia torreyi, Ring Muhly		
Muhlenbergia wrightii, Spike Muhly		
Oryzopsis hymenoides, Indian Rice Grass		
Oryzopsis micrantha, Littleseed Rice Grass		
Panicum obtusum, Vine-mesquite		
Phragmites australis, Common Reed		
Poa fendleriana, Mutton Grass		
Poa pratensis, Kentucky Bluegrass		
Polypogon, monspeliensis	Rr	
Schizachyrium scoparium, Little Bluestem		
Sitanion hystrix, Squirreltail		
Sphenopholus obtusata var. obtusata, Prairie Wedgescale		
Sporobolus cryptandrus, Sand Dropseed		
contractus		Cb
flexuosus	Ch	
Stipa comata, Needle-and-thread grass		
Vulpia octoflora	Cb	
octiflora var. glauca		Cb
<b>Polemoniaceae</b>		
Gilia	inconspicua var. sinuata	Nr-s
Ipomopsis	laxiflora	Cf
	longiflora	Cf
	pumila	Cb
Microsteris	gracilis	Nr-a?
<b>Polygonaceae</b>		
Eriogonum	jamesii	Ch,b
	polycladon	Nr-r
Polygonum	amphibium var. emersum	Rp
	persecaria	Nr-a
Rumex	salicifolius var. mexicanus	Ra,p
<b>Polypodiaceae</b>		
Pellaea	fendleri	Ch,b
Woodsia	mexicana (?)	

**Portulacaceae**

Portulaca	oleracea	Cf
	parvula	Cf

**Primulaceae**

Androsace	septentrionalis	Ch
	occidentalis	Nr-p

**Quercus**

Quercus	gambeli	Ch,b
	undulata	Ch,b

**Ranunculaceae**

Clematis	ligusticifolia	Rp
Delphinium	virescens	Ch,Cf
Ranunculus	cymbalaria	Rs
	sceleratus	

**Rosaceae**

Fallugia	paradoxia	Cf,h,b
Potentilla	anserina	Rs
	rivalis	
Rosa	acicularis	
	woodsii	--

**Rutaceae**

Ptelea	trifoliata	Rp
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**Salicaceae**

Populus	deltoides spp. wislizenis	Ra
Salix	exigua	Ra,p
	gooddingii	
	irrorata	

**Saxifragaceae**

Fendlera	rupicola (upper elevations)	Ch,b
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**Scrophulariaceae**

Castilleja	integra	Cf,h,b
	minor	
Cordylanthus	wrightii	Cf
Linaria	vulgaris	Rr
Mimulus	glabratus	Rs
Penstemon	barbatus	Nr-p
	jamesii	Cb
	secundifloris	Ch

Verbascum	thapsus	Nr-s	Ra
Veronica	americana	Rs	
	anagallis-aquatica	Rp/r	

**Solanaceae**

Datura	innoxia	Cf	
Lycium	pallidum	Cb	
Physalis	hederaefolia	Nr-s	
	hederaefolia var fendleri (cordifolia)		
Solanum	elaegnifolium	Cf,h,b	

**Tamariceae**

Tamarix	pentandra	Rp	Nr-water canyon flooded area
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**Ulmaceae**

Celtis	reticulata	Rp	
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**Verbenaceae**

Glandularia	wrightii	Ch,b	
Verbena	hastata (Peterson)	Rp	Out of Range

**Vitaceae**

Parthenocissus	inserta	Rp	
Vitis	arizonica	Rp	

**Zannichelliaceae**

Zannichellia	palustris		
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**Zygophyllaceae**

Tribulus	terrestris	Nr-s	
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new linum with red center  
 gayophytum?  
 a few others to be identified

## APPENDIX

### Trail to Ancho Rapids, April 25, 1999

Trail well above riparian area (comparison area)

*Chamaesyce serpyllifolia*  
*Mirabilis grandiflora*  
*Heterotheca villosa*  
*Happlopappus spinulosa*  
*Hymenopappus filifolium*  
*Chrysothamnus nauseosus*  
*Artemesia tridentata*  
*Sphaeralcea cocinnus*  
*Artemesia dracunculus*  
*Aesclepias asperula*  
*Eriogonum jamesii*  
*Penstemon jamesii*  
*Tragia nepentaefolia*  
*Erigeron flagellaris*  
*Astragalus nuttaliana*  
*A. flexuosus*  
*Vicea exigua*  
*Lupinus brevicaulus/kingii?*  
*Baileya multiradiata*  
*Phacelia heterophylla*

Trail just above or near the riparian, but relatively dry

<i>Ribes cereum</i> var <i>pedicularis</i>	Nr
<i>Thelletesperma filifolia</i>	Nr
<i>Artemesia ludoviciana</i>	Nr
<i>Artemesia</i> _____	Nr
<i>Echinocereus viridiflora</i>	Nr
<i>Opuntia</i> sp	Nr
<i>Opuntia imbricata</i>	Nr
<i>Xanthium strumarium</i>	Nr
<i>Sisymbrium altissimum</i>	Nr
<i>Descurania sophia</i>	Nr
<i>Lappula radowskii</i>	Nr
<i>Castilleja integra</i>	Nr
<i>Townsendia annua</i>	Nr
<i>Oenothera caespitosa</i>	Nr
<i>coronopifolia</i>	Nr
<i>albicaulis?</i>	Nr

Lithospermum incisum	Nr
Forsteria neomexicana	Nr

Riparian area in or adjacent to the stream

Rorippa nasturcium aquatica	Ra
Berlandiera lyrata	Ra
Corydallis aureus	Ra
Verbascum thapsus	Ra
Melilotus candida	Ra
Taraxacum officianale	Ra
Epilobium ciliatum	Ra
Oxypolis fendleri	Ra
Juncus	Ra
Carex	Ra
Thelypodium wrightii	Ra
Lepidium virginicum	Ra
Erymisium capitatum	Ra
Salix exigua	Ra
Populus deltoides spp. wislizenis	Ra