

Cienega Creek Natural Preserve

Plant Communities

Vegetation within the Preserve is classified and mapped in accordance with the **Brown, Lowe and Pase Classification System** as described in the Biotic Communities of the American Southwest – United States and Mexico. The hierarchical structure of this numerical classification system makes it particularly useful in mapping relatively small sites such as the Preserve. Where applicable, distinctions can be made within the broader biological communities that exist.

Plant associations within the Preserve are as follows:

<u>Name</u>	<u>BLP No.</u>	<u>Map Symbol</u>
Mixed Grass - Mixed Scrub Association	143.155	GS
Burroweed – Mesquite Association	143.163	BM
Creosote – Mariola Association	153.212	CM
Ocotillo – Mixed Scrub Association	153.261	OS
Creosote Association	154.111	C
Creosote – Mixed Scrub Association	154.125	CS
Velvet Mesquite Association	224.521	MF
Velvet Mesquite – Mixed Deciduous Tree Association	224.523	MW
Velvet Mesquite – Mixed Scrub Association	234.712	MS

Source: McGann & Associates. 1994. Cienega Creek Natural Preserve Management Plan, Background Report. Prepared for the Pima County Department of Transportation and Flood Control District by McGann & Associates Inc. with assistance from the Arizona Game and Fish Department's Heritage Fund. Tucson, Arizona.

Brown, Lowe, and Pase Classification

As it applies to the vegetative communities of the American southwest, the Brown, Lowe and Pase typology utilizes a numerical identification system with up to seven digits. The significance of each digit is as follows:

First Digit (Vegetation Type): This digit refers to the general type of vegetation. A (1) in this position refers to Upland Vegetation, while a (2) refers to Wetland Vegetation.

Second Digit (Formation): This digit refers to the type of biological community or formation. Formations within the upland vegetation include Forest/Woodland (2), Scrubland (3), Grassland (4), and Desertland (5). Formations within the Wetland Vegetation include Riparian Forest (2) and Riparian Scrub (3).

Third Digit (Climate): This digit refers to one of four world climatic zones. These zones are distinguished, in part, by the potential for freezing temperatures. Examples include the Warm Temperate Zone (3) and the Tropical/Subtropical Zone (4).

Fourth Digit (Biome): this digit (the first to the right of the decimal) refers to the major biological community or biome. Biome types found within the Preserve include Sonoran Desertscrub, Chihuahuan Desertscrub, and Semi-Desert Grassland.

Fifth Digit (Community/Series): This digit (the second to the right of the decimal) refers to the principal plant community or Series within the biome as distinguished by the dominant plant species. Examples of Series found within the Preserve include the Creosote-Tarbrush Series and the Creosote-Bursage Series.

Sixth Digit (Association): This digit (the third to the right of the decimal) refers to the distinctive plant Associations within the Series. Examples of Associations found within the Preserve include the Creosote-Mariola Association and the Burroweed-Mesquite Association. Where distinct Associations within a Series are not present, this digit is omitted.

Seventh Digit (Sub-Association): This digit (the fourth to the right of the decimal) refers to specific Sub-Associations based on structure, composition, density, and other attributes of the dominant plant species within the Association. When these distinctions are not present, this digit is omitted.

Mixed Grass - Mixed Scrub Association (GS)

BLP Class.: 143.155

Biome: Scrub-Grassland

Series: Mixed Grass – Mixed Scrub

Dominant Species: None

Characterization: Various grasses and scrub plants with Soaptree yucca as a prominent feature

Preserve Location: SE portion, south of Interstate Highway 10, near Empirita Ranch

Overstory Species:

Redseeded Juniper (*Juniperous erthycarpa*)

Velvet Mesquite (*Prosopis velutina*)

Desert Zinnia (*Zinnia acerosa*)

Cacti, Succulents, and Related Plants:

Desert Agave (*Agave deserti*)

Desert Spoon (*Dasylyrion wheeleri*)

Fishhook Barrel Cactus (*Ferocactus wislizenii*)

Ocotillo (*Fouquieria splendens*)

Deergrass (*Nolina microcarpa*)

Prickly Pear / Cholla (*Opuntia spp.*)

Banana Yucca (*Yucca baccata*)

Soaptree Yucca (*Yucca elata*)

Understory Species:

Catclaw Acacia (*Acacia greggii*)

Wright Lippia (*Aloysia wrightii*)

Crucillo (*Condalia spathulata*)

Fairy Duster (*Calliandra eriophylla*)

Longleaf Ephedra (*Ephedra trifurca*)

Broom Snakeweed (*Gutierrezia sarothrae*)

Burroweed (*Haplopappus tenuisectus*)

Creosote Bush (*Larrea tridentate*)

Groundsel (*Senecio spp.*)

Graythorn (*Zizyphus obtusifolia*)

Grasses, Forbs, and Annuals:

Threeawn (*Aristida spp.*)

Cane Beardgrass (*Bothriochloa bardinodis*)

Sideoates Grama (*Bouteloua curtipendula*)

Red Brome (*Bromus rubens*)*

Arizona Cottontop (*Digitaria californica*)

Lehmann Lovegrass (*Eragrostis lehmanniana*)*

Buckwheat (*Eriogonum spp.*)

Fluffgrass (*Erioneuron pulchellus*)

Filaree (*Erodium spp.*)

Curly Mesquite Grass (*Hilaria berlanderi*)

Bush Muhly (*Muhlenbergia porteri*)

Paperflower (*Psilotrophe cooperi*)

Wright Sacaton (*Sporobolus wrightii*)



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Burroweed - Mesquite Association (BM)

Biome: Scrub - Grassland

Series: Shrub – Scrub Disclimax

Dominant Species: burroweed and mesquite

Characterization: Dominant species that have invaded due to prior livestock grazing and clearing

Preserve Location: Typically found adjacent to the main channel of Cienega Creek. It is quite extensive in areas surrounding the Empirita Ranch and in isolated areas along the railroad tracks near Vail Road Bridge.

Overstory Species:

Velvet Mesquite (*Prosopis velutina*)

Understory Species:

Whitethorn Acacia (*Acacia constricta*)

Catclaw Acacia (*Acacia greggii*)

Fourwing Saltbush (*Atriplex canescens*)

Desert Broom (*Baccharis sarothroides*)

Broom Snakeweed (*Gutierrezia sarothrae*)

Burroweed (*Haplopappus tenuisectus*)

Groundsel (*Senecio spp.*)

Grasses, Forbs, and Annuals:

Threeawn (*Aristida spp.*)

Desert Marigold (*Baileya multiradiata*)

Red Brome (*Bromus rubens*)*

Lehmann Lovegrass (*Eragrostis lehmanniana*)*

Fluffgrass (*Erioneuron pulchellus*)

Wright Sacaton (*Sporobolus wrightii*)

Cacti, Succulents, and Related Plants:

Prickly Pear / Cholla (*Opuntia spp.*)



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Creosote – Mariola Association (CM)

Biome: Chihuahuan Desertscrub

Series: Tarbush

Dominant Species: Creosote Bush and Mariola

Characterization: Predominating woody shrubs, infrequent occurrence of grasses, and widely spaced small trees

Preserve Location: On the hilltops and gentle hillsides overlooking Cienega Creek and its tributaries, but does not extend into the more mesic drainages

Overstory Species:

Whitethorn Acacia (*Acacia constricta*)

Redseeded Juniper (*Juniperous erthycarpa*)

Understory Species:

Wright Lippia (*Aloysia wrightii*)

Fourwing Saltbush (*Atriplex canescens*)

Spreading Coldenia (*Coldenia canescens*)

Creosote Bush (*Larrea tridentate*)

Longleaf Ephedra (*Ephedra trifurca*)

Mariola (*Parthenium incanum*)

Grasses, Forbs, and Annuals:

Croton (*Croton spp.*)

Dyssodia (*Dyssodia spp.*)

Littleleaf Ratany (*Krameria parviflora*)

Spike Dropseed (*Sporobolus contractus*)

Desert Zinnia (*Zinnia acerosa*)

Cacti, Succulents, and Related Plants:

Desert Spoon (*Dasyilirion wheeleri*)

Ocotillo (*Fouquieria splendens*)

Beargrass (*Nolina microcarpa*)

Prickly Pear / Cholla (*Opuntia spp.*)

Soaptree Yucca (*Yucca elata*)



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Ocotillo – Mixed Scrub Association (OS)

Biome: Chihuahuan Desertscrub

Series: Mixed Scrub

Dominant Species: Ocotillo

Characterization: Dominated by ocotillo with woody shrubs and small trees also present; infrequent occurrence of grasses

Preserve Location: Limited to a few small upland areas located at the extreme southeast end of the Preserve near Empirita Ranch

Overstory Species:

Whitethorn Acacia (*Acacia constricta*)

Catclaw Acacia (*Acacia greggii*)

Velvet Mesquite (*Prosopis velutina*)

Understory Species:

Wright Lippia (*Aloysia wrightii*)

Fourwing Saltbush (*Atriplex canescens*)

Longleaf Ephedra (*Ephedra trifurca*)

Creosote Bush (*Larrea tridentate*)

Mariola (*Parthenium incanum*)

Graythorn (*Zizyphus obtusifolia*)

Grasses, Forbs, and Annuals:

Dyssodia (*Dyssodia spp.*)

Paperflower (*Psilotrophe cooperi*)

Spike Dropseed (*Sporobolus contractus*)

Desert Zinnia (*Zinnia acerosa*)

Cacti, Succulents, and Related Plants:

Desert Spoon (*Dasyliirion wheeleri*)

Ocotillo (*Fouquieria splendens*)

Prickly Pear / Cholla (*Opuntia spp.*)

Soaptree Yucca (*Yucca elata*)



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Creosote Association (C)

Biome: Sonoran Desertscrub

Series: Creosote - Bursage

Dominant Species: Creosote Bush

Characterization: Fairly uniform distribution of Creosote Bush, with uncommon occurrence of other woody shrubs and small, widely spaced Mesquite trees

Preserve Location: Relatively flat upland areas along Davidson Canyon near Cienega Creek confluence and Aqua Verde Creek; also occurs in areas northwest of Empirita Ranch

Overstory Species:

Velvet Mesquite (*Prosopis velutina*)

Understory Species:

Creosote Bush (*Larrea tridentate*)

Grasses, Forbs, and Annuals:

Threeawn (*Aristida spp.*)

Red Brome (*Bromus rubens*)*

Fluffgrass (*Erioneuron pulchellus*)

Bush Muhly (*Muhlenbergia porteri*)

Woolly Plantain (*Plantago insularis*)

Paperflower (*Psilotrophe cooperi*)

Desert Zinnia (*Zinnia acerosa*)

Cacti, Succulents, and Related Plants:

Fishhook Barrel Cactus (*Ferocactus wislizenii*)

Ocotillo (*Fouquieria splendens*)

Banana Yucca (*Yucca baccata*)

Soaptree Yucca (*Yucca elata*)



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Creosote – Mixed Scrub Association (CS)

Biome: Sonoran Desertscrub

Series: Palo Verde – Mixed Cacti (Arizona Upland)

Dominant Species: Palo Verde and Creosote Bush

Characterization: Presence of several species of trees, woody shrubs and cacti

Preserve Location: Ridges and hillsides northwest of Davidson Canyon, upland areas northwest of the Tucson Electric Power transmission line, and in limited areas south of I-10 and southwest of Cienega Creek

Overstory Species:

Blue Palo Verde (*Cercidium floridum*)

Foothills Palo Verde (*Cercidium microphyllum*)

Redseeded Juniper (*Juniperous erthycarpa*)

Velvet Mesquite (*Prosopis velutina*)

Understory Species:

Whitethorn Acacia (*Acacia constricta*)

Catclaw Acacia (*Acacia greggii*)

Wright Lippia (*Aloysia wrightii*)

Fourwing Saltbush (*Atriplex canescens*)

Desert Broom (*Baccharis sarothroides*)

Sweetbush (*Bebbia juncea*)

Fairy Duster (*Calliandra eriophylla*)

Desert Hackberry (*Celtis pallida*)

Brittlebush (*Encelia farinosa*)

Longleaf Ephedra (*Ephedra trifurca*)

Broom Snakeweed (*Gutierrezia sarothrae*)

Creosote Bush (*Larrea tridentate*)

Wolfberry (*Lycium spp.*)

Grasses, Forbs, and Annuals:

Red Brome (*Bromus rubens*)*

Dyssodia (*Dyssodia spp.*)

Buckwheat (*Eriogonum spp.*)

Bush Muhly (*Muhlenbergia porteri*)

Paperflower (*Psilotrophe cooperi*)

Desert Zinnia (*Zinnia acerosa*)

Cacti, Succulents, and Related Plants:

Desert Agave (*Agave deserti*)

Palmer Agave (*Agave palmeri*)

Saguaro (*Carnegiea gigantea*)

Desert Spoon (*Dasylyrion wheeleri*)

Hedgehog Cactus (*Echinocactus spp.*)

Fishhook Barrel Cactus (*Ferocactus wislizenii*)

Ocotillo (*Fouquieria splendens*)

Pincushions (*Mammillaria spp.*)

Prickly Pear / Cholla (*Opuntia spp.*)

Soaptree Yucca (*Yucca elata*)

Banana Yucca (*Yucca baccata*)



Velvet Mesquite Association (MF)

Biome: Sonoran Riparian and Oasis Forest

Series: Mesquite

Dominant Species: Mesquite

Characterization: Dense and homogeneous concentrations of large mesquite trees that form a closed or nearly closed canopy

Preserve Location: Adjacent to the main channel of Cienega Creek and its principal tributaries Davidson Canyon and Agua Verde Creek

Overstory Species:

Velvet Mesquite (*Prosopis velutina*)

Understory Species:

Catclaw Acacia (*Acacia greggii*)

Seepwillow (*Baccharis salicifolia*)

Desert Broom (*Baccharis sarothroides*)

Desert Hackberry (*Celtis pallida*)

Burroweed (*Haplopappus tenuisectus*)

Burrowbush (*Hymenoclea monogyra*)

Wolfberry (*Lycium spp.*)

Graythorn (*Zizyphus obtusifolia*)

Grasses, Forbs, and Annuals:

Astragalus (*Astragalus thurberi*)

Red Brome (*Bromus rubens*)*

Bermuda Grass (*Cynodon dactylon*)*

Dicliptera (*Dicliptera resupinata*)

Deergrass (*Muhlenbergia rigens*)

Wright Sacaton (*Sporobolus wrightii*)

Cacti, Succulents, and Related Plants:

(None common to this plant association)



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Velvet Mesquite – Mixed Deciduous Tree Association (MW)

Biome: Sonoran Riparian and Oasis Forest

Series: Mesquite

Dominant Species: Velvet Mesquite, Fremont Cottonwood, Goodding Willow and Ash trees

Characterization: Dense concentrations of large trees forming a continuous or nearly continuous canopy

Preserve Location: Perennial stream portions of the Cienega Creek main channel between the old Pantano townsite and the De Lago Water Company Dam (Pantano Dam)

Overstory Species:

Netleaf Hackberry (*Celtis reticulata*)
Blue Palo Verde (*Cercidium floridum*)
Arizona Ash (*Fraxinus velutina*)
Arizona Walnut (*Juglans major*)
Arizona Sycamore (*Platanus wrightii*)
Fremont Cottonwood (*Populus fremontii*)
Velvet Mesquite (*Prosopis velutina*)
Goodding Willow (*Salix gooddingii*)
Mexican Elderberry (*Sambucus mexicana*)
Salt Cedar (*Tamarix pentandra*)

Understory Species:

Catclaw Acacia (*Acacia greggii*)
Seepwillow (*Baccharis salicifolia*)
Desert Broom (*Baccharis sarothroides*)
Burroweed (*Haplopappus tenuisectus*)
Burrowbush (*Hymenoclea monogyra*)
Wolfberry (*Lycium spp.*)
Graythorn (*Zizyphus obtusifolia*)

Grasses, Forbs, and Annuals:

Yellow Columbine (*Aquilegia chrysantha*)
Red Brome (*Bromus rubens*)*
Bermuda Grass (*Cynodon dactylon*)*
Deergrass (*Muhlenbergia rigens*)
Watercress (*Nasturtium aquaticum*)
Blue Panic (*Panicum antidotale*)
Clammyweed (*Polanisia trachysperma*)
Climbing Milkweed (*Sarcostemma spp.*)
Bullrush (*Scirpus olneyi*)
Wright Sacaton (*Sporobolus wrightii*)

Cacti, Succulents, and Related Plants:

(None common to this plant association)



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Velvet Mesquite – Mixed Scrub Association (MS)

Biome: Sonoran Deciduous Swamp and Riparian Scrub

Series: Mixed Scrub

Dominant Species: Mesquite

Characterization: Small trees that do not create a continuous canopy cover with a variety of woody shrubs that can form dense thickets

Preserve Location: Along minor tributaries to Cienega Creek and other drainages

Overstory Species:

Whitethorn Acacia (*Acacia constricta*)

Catclaw Acacia (*Acacia greggii*)

Blue Palo Verde (*Cercidium floridum*)

Foothills Palo Verde (*Cercidium microphyllum*)

Desert Willow (*Chilopsis linearis*)

Velvet Mesquite (*Prosopis velutina*)

Understory Species:

Seepwillow (*Baccharis salicifolia*)

Desert Broom (*Baccharis sarothroides*)

Desert Hackberry (*Celtis pallida*)

Burroweed (*Haplopappus tenuisectus*)

Burrowbush (*Hymenoclea monogyra*)

Wolfberry (*Lycium spp.*)

Graythorn (*Zizyphus obtusifolia*)

Grasses, Forbs, and Annuals:

Threeawn (*Aristida spp.*)

Red Brome (*Bromus rubens*)*

Arizona Cottontop (*Digitaria californicum*)

Bush Muhly (*Muhlenbergia porteri*)

Cacti, Succulents, and Related Plants:

(None common to the plant association)



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