Ecological site R030XB128CA
Cobbly Wash

Last updated: 2/26/2025
Accessed: 05/11/2025

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Classification relationships

NDDB/Holland, R.F. 1986: Mojave Wash Scrub; Manual of California Vegetation, 1995: Catclaw acacia series

Ecological site concept

This site occurs along drainageways of inset fans. Elevations are 1100 to 2400 feet. Slopes range from 2 to 8 percent. The soils that characterize this site are very deep and excessively drained. They are formed in stratified alluvium from mixed sources. Surface and subsurface textures are loamy coarse sands, extremely gravelly sands and very cobbly sands.

Please refer to group concept R030XD010CA to view the provisional STM.

Associated sites

R030XB019NV	**Eroded Fan Remnant Pavette 4-6 P.Z.** Limy 3-5

Similar sites

R030XB136CA	**Dry Wash** Dry Wash- white burrobush and creosotebush are dominant shrubs; less productive site.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Hyptis emoryi* (2) *Acacia greggii*
Herbaceous	(1) *Pleuraphis rigida*

Physiographic features

This site occurs along drainageways of inset fans. Elevations are 1100 to 2400 feet. Slopes range from 2 to 8 percent.

Table 2. Representative physiographic features

Landforms	(1) Inset fan (2) Drainageway
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)

Flooding frequency	Frequent
Ponding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Ponding frequency	None
Elevation	1,100–2,400 ft
Slope	2–8%
Water table depth	0 in
Aspect	Aspect is not a significant factor

Climatic features

The climate on this site is arid, characterized by warm, moist winters (30 to 60 degrees F) and hot, dry summers (70 to 100 degrees F). The average annual precipitation ranges from 2 to 6 inches with most falling as rain from November to March. Approximately 30% to 45% of the annual precipitation occurs from July to September as a result of summer convection storms. Mean annual air temperature is 61 to 73 degrees F.

The average frost-free period is 240 to 360 days.

Table 3. Representative climatic features

Frost-free period (average)	360 days
Freeze-free period (average)	365 days
Precipitation total (average)	6 in

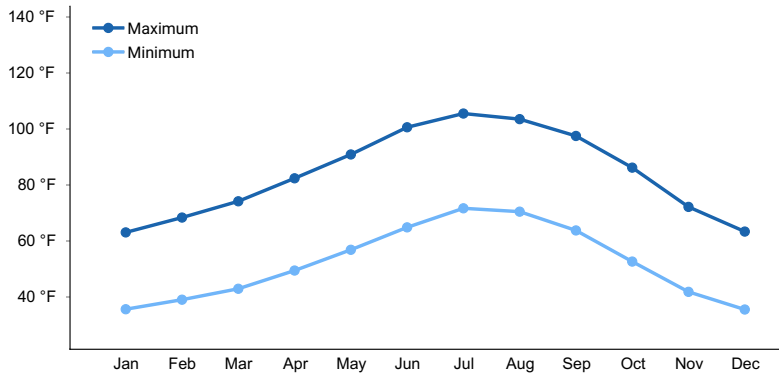


Figure 1. Monthly average minimum and maximum temperature

Influencing water features

This site occurs in drainageways of ephemeral streams and is subject to frequent flash flooding.

Soil features

The soils that characterize this site are very deep and excessively drained. They are formed in stratified alluvium from mixed sources. Surface and subsurface textures are loamy coarse sands, extremely gravelly sands and very cobbly sands. Available water capacity is very low and permeability is very rapid. Wind erosion hazard is negligible due to surface rock fragments. Effective rooting depth is 60 inches or more. Water tables are greater than 60 inches. This site is subject to frequent flooding.

Representative_Soil Map Units

274 Arizo inclusion, Arizo extremely gravelly loamy coarse sand, dry, 2-8% slopes

276 Arizo inclusion, Arizo, dry-Twobitter association,2-8% slopes
313 Carrizo inclusion, Carrizo complex, 2-8% slopes
314 Carrizo inclusion, Carrizo complex, 2-8% slopes, Rubbly
315 Carrizo inclusion, Carrizo-Clegorpass association, 2-8% slopes

Table 4. Representative soil features

Surface texture	(1) Loamy coarse sand (2) Extremely gravelly sand (3) Very cobbly sand
Family particle size	(1) Sandy
Drainage class	Excessively drained
Permeability class	Very rapid
Soil depth	72–120 in
Surface fragment cover <=3"	35%
Surface fragment cover >3"	5%
Available water capacity (0-40in)	0.06–0.08 in
Calcium carbonate equivalent (0-40in)	1–5%
Electrical conductivity (0-40in)	0–2 mmhos/cm
Sodium adsorption ratio (0-40in)	0–5
Soil reaction (1:1 water) (0-40in)	7–8.6
Subsurface fragment volume <=3" (Depth not specified)	60%
Subsurface fragment volume >3" (Depth not specified)	10%

Ecological dynamics

Please refer to group concept R030XD010CA to view the provisional STM.

As ecological condition deteriorates, creosotebush, white burrobush and white bursage will initially increase. Perennial forbs and grasses will decrease. Continued surface disturbance may reduce the cover of the short-lived perennials as well as the long-lived perennials such as desert lavender, creosotebush and catclaw acacia. Species likely to invade this site include *Salsola tragus*, Russian thistle, which occurs in heavily disturbed areas. Other non-native plants occurring on this site include red brome, *Bromus rubens*; red-stem filaree, *Erodium cicutarium*; and schismus, Schismus spp.

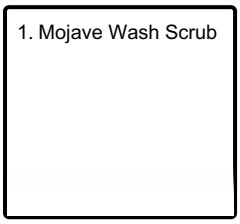
Species indigenous to this site are recommended for any revegetation efforts. Desert lavender has been successfully transplanted using cuttings. Catclaw acacia has shown varying success when transplanted onto disturbed sites. Seedlings should be grown in tall containers to allow for the development of a deep root system. White burrobush is a short-lived species, although the seeds have high viability and germination rates compared to other desert shrubs. Creosotebush, is a long-lived species, which once established may improve the site for annuals that grow under its canopy by trapping fine soil, organic matter and seeds. Creosotebush can be used for long-term stabilization and for improvement of desert tortoise habitat.

Transplanting seedlings is more effective than direct seeding. Planting in late fall or early spring allows for acclimation to summer conditions. Transplants that are dormant during the hot, dry season are best maintained that way rather than attempting to force them to break dormancy and undergo new vegetative growth out of season. Supplemental irrigation is recommended for the first growing season, especially if winter rainfall has been sparse. Protection from rodents is also recommended.

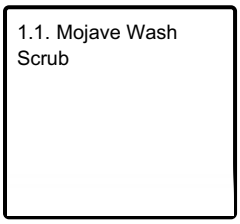
This site is usually unaffected by fire because of low fuel loads, although a year of exceptionally heavy winter rains can generate fuels by producing a heavy stand of annual forbs and grasses. Desert lavender and catclaw acacia are able to resprout from the root crown following top-kill by fire. White burrobush establishes quickly after fire via off-site seeds and sprouting. Creosotebush possesses limited sprouting ability, thus, can be killed by fire.

State and transition model

Ecosystem states



State 1 submodel, plant communities



State 1
Mojave Wash Scrub

Community 1.1
Mojave Wash Scrub

The representative natural plant community is Mojave Wash Scrub. Desert lavender, catclaw acacia, creosotebush and big galleta dominate this community. Potential vegetative composition is about 15% grasses, 10% forbs, and 75% shrubs. The historic site potential is a diverse community with an open canopy of shrubs. Perennial grasses and forbs are common. Annuals are seasonally present and are abundant in years of above average precipitation. This site is inherently unstable due to the frequency of flooding. The following table lists the major plant species and percentages by weight, air dry, of the total plant community that each contributes in an average production year. Fluctuations in species composition and relative production may change from year to year dependent upon abnormal precipitation or other climatic factors.

Forest overstory. Allow no more than 5% of each species of this group, and no more than 20% in aggregate

Forest understory. Allow no more than 2% of each species of the grasses group, and no more than 5% in aggregate

Allow no more than 3% of each species of forbs group, and no more than 8% in aggregate

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	187	262	375
Grass/Grasslike	38	53	75
Forb	25	35	50
Total	**250**	**350**	**500**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	4-11%
Grass/grasslike foliar cover	1-2%
Forb foliar cover	0-1%
Non-vascular plants	0%
Biological crusts	0%
Litter	0%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

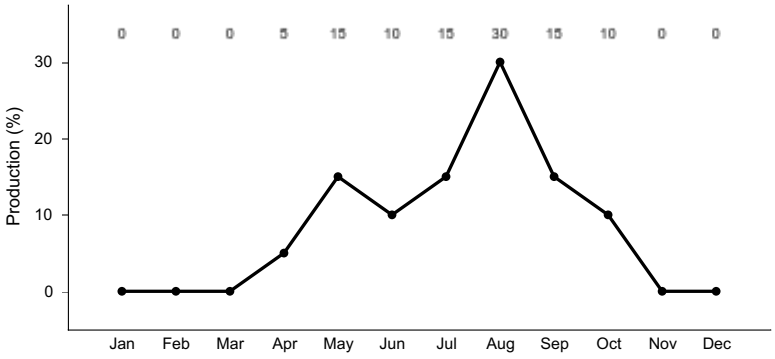


Figure 3. Plant community growth curve (percent production by month). AZ3091, 30.23 6-10" p.z. catclaw acacia. Growth begins in spring and continues through summer. Flowers from May through June. Seeds from July through September..

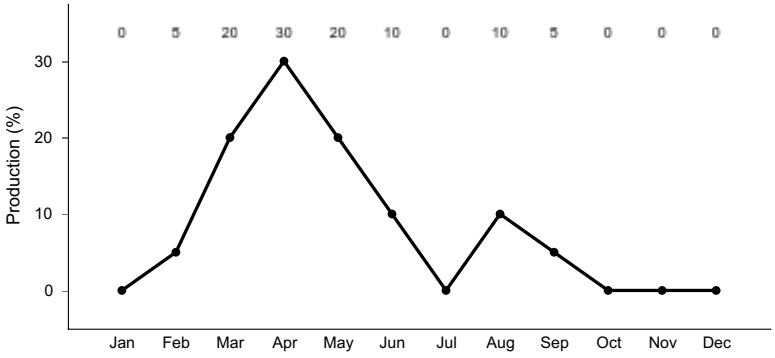


Figure 4. Plant community growth curve (percent production by month). CA3015, Creosote bush XB. Growth starts in early spring with flowering and seed set occurring by July. Dormancy occurs during the hot summer months. With sufficient summer/fall precipitation, some vegetation may break dormancy and produce a flush of growth..

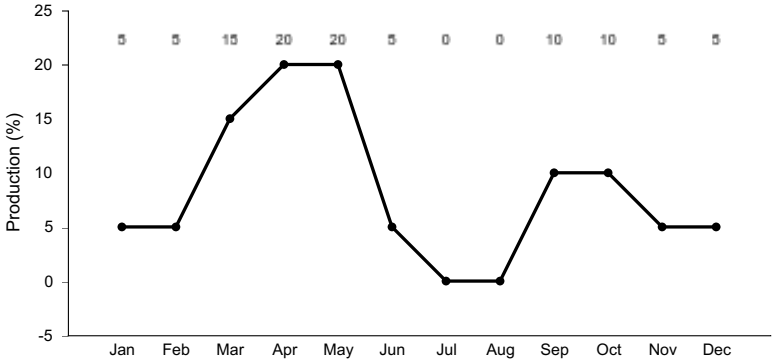


Figure 5. Plant community growth curve (percent production by month). CA3023, Desert Lavender. If moisture and temperature conditions are favorable growth may occur throughout the year. Flowering may occur at any time during the year, with peak flowering occurring from October through May. Seeds are typically collected during the spring..

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Tree					
1				1–5	
	smoketree	PSSP3	*Psorothamnus spinosus*	1–5	–
Shrub/Vine					
2				150–375	
	desert lavender	HYEM	*Hyptis emoryi*	45–175	–
	creosote bush	LATR2	*Larrea tridentata*	10–35	–
	catclaw acacia	ACGR	*Acacia greggii*	10–35	–
	sweetbush	BEJU	*Bebbia juncea*	10–20	–
	burrobrush	HYSA	*Hymenoclea salsola*	10–20	–
Grass/Grasslike					
3				15–75	
	big galleta	PLRI3	*Pleuraphis rigida*	12–50	–
	desert needlegrass	ACSP12	*Achnatherum speciosum*	3–25	–

Animal community

Ephemeral washes are known to be zones of high animal activity in the desert. An abundance of insects attracts both birds and mammals to the wash. The occurrence of taller statured shrubs also provide wildlife cover, thus the washes serve as wildlife corridors. Mammals common to this site include long-tailed pocket mice, canyon mice, white-tailed antelope squirrels, coyotes and black-tailed jackrabbits. Common lizards include side-blotched lizard, western whiptail and zebra-tailed lizard. Desert tortoise frequently den in the banks and berms of washes and feed on vegetation occurring in the wash. Birds common to this site include Costas hummingbirds, black-throated sparrows, black-tailed gnatcatchers, verdins and mourning doves.

This site has limited value for livestock grazing due to low productivity. Desert lavender provides limited forage for livestock. Catclaw acacia is poor forage for livestock. It may be browsed in early spring when twigs are green but is otherwise seldom eaten. Creosotebush is unpalatable. During favorable years, annual grasses and forbs provide additional forage.

General guide to initial stocking rate. Before making specific recommendations, an on-site evaluation must be made.

Pounds/acre
air dry
Normal Years 350

Hydrological functions

Runoff is very low and low. Hydrologic soil group A - soils having high infiltration rates even when thoroughly wetted and consisting chiefly of deep, well drained to excessively drained sands or gravels. Hydrologic conditions: good - >70% ground cover (includes litter, grass and brush overstory); fair - 30 to 70% ground cover; poor <30% ground cover.

Soil Series:Arizo
Hydrologic Group:A
Hydrologic Conditions and Runoff Curves:
Good 49; Fair 55; Poor 63

Soil Series: Carrizo
Hydrologic Group:A
Hydrologic Conditions and Runoff Curves:
Good 49; Fair 55; Poor 63

Vehicle use in washes may alter the vegetation and channel morphology. This may result in increased peak flows, accelerated erosion and increased flash flooding. Channel width and depth may increase with a loss of vegetative cover and an alteration of channel morphology.

Recreational uses

This site is valued for open space and those interested in desert ecology. Desert tortoise, and flowering wildflowers and shrubs may also attract visitors during the spring

Other information

Military Operations - Vehicle use in washes can destroy the vegetation and channel morphology. The frequency of flash flooding may also increase with increased surface runoff and loss of vegetative cover. Channel width and depth will also increase. Gully stabilization methods include straw bale checkdams, rock riprap and sand bags. Management for this site would be to protect it from excessive disturbance and maintain existing plant cover.

Inventory data references

Sampling technique

_2_ NV-ECS-1
___ SCS-Range 417
_2_ Other

Other references

Cutler, P.L. and D.J. Griffin 1998. Personal
communication, September 1998.

Contributors

Patti Novak-Echenique

Approval

Sarah Quistberg, 2/26/2025

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	05/11/2025
Approved by	Sarah Quistberg
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant:

    Sub-dominant:

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

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17. **Perennial plant reproductive capability:**
