USDA Natural Resources
Conservation Service

Ecological site R030XB136CA
Dry Wash

Last updated: 2/26/2025
Accessed: 05/12/2025

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. Preliminary descriptions of the terrestrial natural communities of California - Mojave Wash Scrub; J.O. Sawyer and T.Keeler-Wolf. 1995. Manual of California Vegetation - Catclaw acacia series.

Ecological site concept

This site occurs on inset fans along drainageways of ephemeral streams. Elevations are 1300 to 4500 feet. Slopes gradients of 2 to 8 percent are most typical.

The soils that characterize this site are very deep and excessively drained. They are formed in mixed alluvium. Surface textures are gravelly and extremely gravelly loamy coarse sands and very gravelly fine sands. Subsurface textures are very gravelly coarse sands, very gravelly loamy coarse sands and very cobbly loamy coarse sands.

Please refer to group concept R030XB187CA to view the provisional STM.

Associated sites

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

Similar sites

R030XB145CA	**Valley Wash** Valley Wash [more productive site; has ACGR]
R030XB128CA	**Cobbly Wash** Cobbly Wash [HYEM-ACGR dominate shrubs]

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Hymenoclea salsola* (2) *Larrea tridentata*
Herbaceous	Not specified

Physiographic features

This site occurs on inset fans along drainageways of ephemeral streams. Elevations are 1300 to 4500 feet. Slopes gradients of 2 to 8 percent are most typical.

Table 2. Representative physiographic features

Landforms	(1) Stream terrace
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Frequent to very frequent
Elevation	1,800–2,835 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 110 degrees F). The average annual precipitation ranges from 3 to 7 inches with most falling as rain from November to March. Approximately 25% 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)	300 days
Freeze-free period (average)	365 days
Precipitation total (average)	6 in

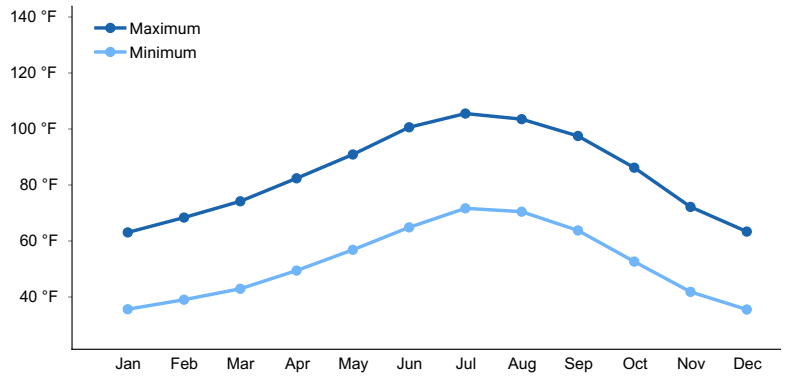

Figure 1. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

The soils that characterize this site are very deep and excessively drained. They are formed in mixed alluvium. Surface textures are gravelly and extremely gravelly loamy coarse sands and very gravelly fine sands. Subsurface textures are very gravelly coarse sands, very gravelly loamy coarse sands and very cobbly loamy coarse sands. Available water capacity is very low and low and the permeability is moderately rapid to very rapid. Wind erosion hazard is moderate. Effective rooting depth is 60 inches or more. Water tables are greater than 60 inches.

Representative_Soil Map Units
112 Crosgrain-Cronese-Arizo association, 2-8%
slopes
220 Garlock-Ambrosia-Arizo complex, 2-8%

slopes
221 Arizo complex, 2-4% slopes
550 Carrizo-Clegorpass-Carrizo frequently flooded, association, 2-8% slopes

Table 4. Representative soil features

Surface texture	(1) Very gravelly loamy sand (2) Extremely gravelly loamy sand (3) Very gravelly sand
Family particle size	(1) Sandy
Drainage class	Excessively drained
Permeability class	Rapid to very rapid
Soil depth	60 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)	0–5%
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 R030XB187CA to view the provisional STM.

Surface disturbance may reduce plant cover, density and diversity of this site. As ecological condition deteriorates, white burrobush and bush encelia will initially increase. Perennial grasses and forbs will decrease. Continued surface disturbance may reduce the cover of the short-lived perennials as well as the long-lived perennials such as creosotebush. Species likely to invade this site include saltcedar and non-native annual grasses and forbs such as schismus, red brome, red-stem filaree and Russian thistle.

Dry 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. Management for this site would be to protect it from excessive disturbance and maintain existing plant cover. Close roads and trails no longer being used and revegetate using native species indigenous to this site. Restore channel morphology where impacted. Water developments would also increase the species diversity of this site.

Species indigenous to this site are recommended for any revegetation efforts. 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. 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

1. Reference State - Plant Community 1

State 1 submodel, plant communities

1.1. Reference State - Plant Community 1

State 1
Reference State - Plant Community 1

Community 1.1
Reference State - Plant Community 1

The interpretative plant community is the historic climax plant community. The historic site potential is a diverse community with an open canopy of shrubs less than 2 meters tall. This site lacks a tree component. Vegetative composition is about 80% shrubs, 10% grasses and 10% forbs. Cryptogamic crusts are absent. Perennial grasses include big galleta, desert needlegrass, Indian ricegrass and fluffgrass. Perennial forbs include sacred datura, desert globemallow and desert milkweed. Annuals are seasonally present. Approximate ground cover (basal and crown) is 5 to 15 percent. Fire effects: this site is usually unaffected by fire due to low fuel loads, although a year of exceptionally heavy winter rains can generate fuels by producing a heavy stand of annual forbs and grasses. White burrobush quickly reestablishes via off-site seeds and resprouting. Creosotebush possesses limited sprouting ability, thus can be killed by fire.

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 the forbs group and no more than 10% in aggregate

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	60	120	280
Forb	7	15	35
Grass/Grasslike	8	15	35
Total	**75**	**150**	**350**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	4-12%
Grass/grasslike foliar cover	0-1%
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%

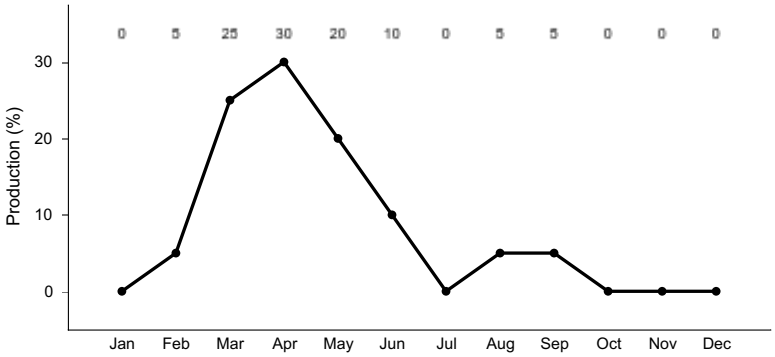

Figure 3. Plant community growth curve (percent production by month). CA3011, Burrobrush . Growth starts in early spring; flowering and seed set occur by June. Plants go dormant as a result of summer stress. New twig and leaf growth are initiated after summer and winter rains..

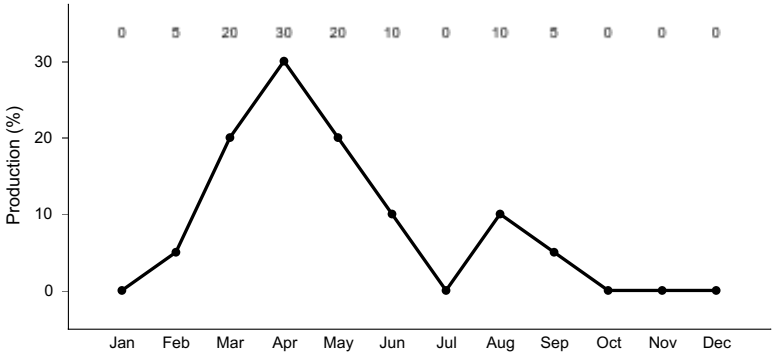

Figure 4. Plant community growth curve (percent production by month). CA3015, Creosote bush XB. Growth starts in early spring with flowering and seed set occurring by July. Dormancy occurs during the hot summer months. With sufficient summer/fall precipitation, some vegetation may break dormancy and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

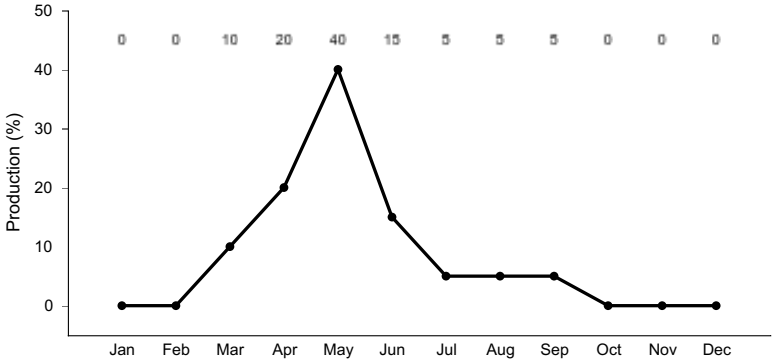

Figure 5. Plant community growth curve (percent production by month). CA3017, Desert Senna. Growth starts in spring, flowering occurs from April to May and after summer/fall rains..

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Shrub/Vine					
1				60–280	
	burrobrush	HYSA	*Hymenoclea salsola*	25–85	–
	creosote bush	LATR2	*Larrea tridentata*	5–45	–
	sand spikemoss	SEAR	*Selaginella arenicola*	5–45	–
	desertsenna	SEAR8	*Senna armata*	5–45	–
	California jointfir	EPCA2	*Ephedra californica*	5–45	–
Grass/Grasslike					
2				3–5	
	desert needlegrass	ACSP12	*Achnatherum speciosum*	1–2	–
	big galleta	PLRI3	*Pleuraphis rigida*	1–2	–

Animal community

Mammals occuring on this site include coyotes, black-tailed jackrabbits, Merriam kangaroo rats, cactus and canyon mice and long-tailed pocket mice.

Common lizards include the side-blotched lizard, desert horned 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 commonly occurring on this site include horned larks, mourning doves, Costa hummingbirds, common ravens, black-tailed gnatcatchers, rock wrens, loggerhead shrikes, and black-throated sparrows.

Other Mgt. Considerations: This site has limited use for livestock grazing due to low productivity. White burrobush seeds are grazed by domestic sheep. Creosotebush is unpalatable to livestock. Annual forbs and grasses provide abundant forage during favorable years.

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

Pounds/acre
air dry AUM/AC AC/AUM

Normal Years 150

Hydrological functions

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.

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.

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

Recreational uses

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

Other information

Military Operations - Vehicle use in washes may alter the vegetation, channel morphology and soil structure. This may result in soil compaction, reduced infiltration rates, increased peak flows, accelerated erosion, soil blowing and barren areas. 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

_3_ NV-ECS-1
_2_ SCS-Range 417
_1_ Other

Other references

Brown, T.K. and K.A. Nagy with R.D. Nieuhaus, Inc. 1995. Final Report, Herpetological Surveys and Physiological Studies on the western portion of Fort Irwin NTC. Brydolf, B. with R.D. Nieuhaus, Inc. 1996. Final Report, 1994 Avian survey at the National Training Center, Fort Irwin, CA. Cutler, P.L., P.R. Krausman, and D.J. Griffin. 1998. Draft Report: Wildlife inventory of the Marine Corps Air Ground Combat Center, Twentynine Palms, California.

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	05/12/2025
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:**
