

Ecological site R030XB143CA **Shallow Granitic Loam 5-7" P.Z.**

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.

Ecological site concept

This site occurs on erosional fan remnants. Elevations are 3200 to 4800 feet. Slopes range from 2 to 8 percent.

Please refer to group concept R030XB188CA to view the provisional STM.

Associated sites

R030XB125CA	Gravelly Slope 5-7" P.Z. Gravelly Slope 5-7
R030XB136CA	Dry Wash Dry Wash

Similar sites

R030XB057NV	SHALLOW GRANITIC LOAM 5-7 P.Z. Shallow Granitic Loam 5-7
R030XB144CA	Shallow Granitic Slope 5-7" P.Z. Shallow Granitic Slope 5-7
R030XB125CA	Gravelly Slope 5-7" P.Z. Gravelly Slope 5-7

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Coleogyne ramosissima</i> (2) <i>Larrea tridentata</i>
Herbaceous	(1) <i>Achnatherum speciosum</i>

Physiographic features

This site occurs on erosional fan remnants. Elevations are 3200 to 4800 feet. Slopes range from 2 to 8 percent.

Table 2. Representative physiographic features

Landforms	(1) Fan remnant
Flooding duration	Extremely brief (0.1 to 4 hours)
Flooding frequency	None to very rare
Ponding frequency	None

Elevation	3,200–4,800 ft
Slope	2–30%
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 4 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 66 degrees F.

Table 3. Representative climatic features

Frost-free period (average)	250 days
Freeze-free period (average)	285 days
Precipitation total (average)	7 in

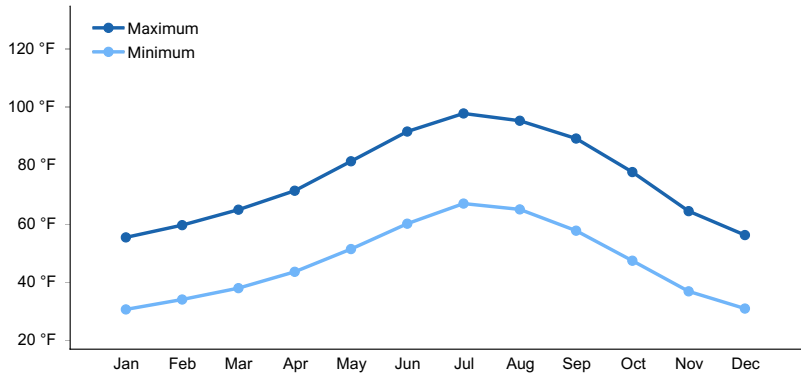


Figure 1. Monthly average minimum and maximum temperature

Influencing water features

There are no significant water features in this ecological site.

Soil features

The soils that characterize this site are very deep and well drained. They are formed from granitic alluvium. Surface textures are extremely gravelly coarse sandy loams. Subsurface textures are very gravelly loams, very gravelly coarse sandy loams, and very gravelly coarse sands. Available water capacity is low and permeability is moderate. Wind erosion hazard is negligible due to surface coarse fragments. Effective rooting depth is 60 inches or more.

Soil survey area - Map unit symbol - Component

- CA805 - 4200 - Owlshead
- CA805 - 4122 - Popups
- CA697 - 171 - Khyber

Table 4. Representative soil features

Surface texture	(1) Extremely gravelly coarse sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate

Soil depth	60–80 in
Surface fragment cover ≤3"	30–60%
Surface fragment cover >3"	2–5%
Available water capacity (0–40in)	1–4 in
Calcium carbonate equivalent (0–40in)	0–15%
Electrical conductivity (0–40in)	0 mmhos/cm
Sodium adsorption ratio (0–40in)	0
Soil reaction (1:1 water) (0–40in)	7.4–8
Subsurface fragment volume ≤3" (Depth not specified)	0–3%
Subsurface fragment volume >3" (Depth not specified)	10–70%

Ecological dynamics

Please refer to group concept R030XB188CA to view the provisional STM.

The representative natural plant community is Blackbrush Scrub. This community is dominated by blackbrush (*Coleogyne ramosissima*), creosote bush (*Larrea tridentata*), and desert needlegrass (*Achnatherum speciosum*). Potential vegetative composition by air dry weight is about 20% grasses, 10% forbs, and 70% shrubs.

Blackbrush is a long-lived dominant on older, undisturbed geologic sites. Succession occurs at a very slow rate. Desert communities are 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. When fires do occur, the effect on the ecosystem may be extreme due to the harsh environment and the slow rate of recovery.

Blackbrush and creosote bush possess limited sprouting ability, and can be killed by high intensity fires. Current knowledge indicates that the return of blackbrush and creosote bush may take many years. While creosote bush may establish seedlings in a burned site, blackbrush typically does not regenerate after a fire and may be a relic from a time when the climate was cooler and moister. Nevada ephedra (*Ephedra nevadensis*), spiny hopsage (*Grayia spinosa*), and desert needlegrass are reported to resprout from the root crown after fire damages aboveground vegetation. Following a fire, California buckwheat (*Eriogonum fasciculatum*), white burrobush (*Hymenoclea salsola*), and desert needlegrass will increase. Non-native annual grasses and forbs, such as red brome (*Bromus rubens*), schismus (*Schismus arabicus*), and redstem stork's bill (*Erodium cicutarium*) are post-fire invaders on this site.

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. Water developments would increase the species diversity of this site.

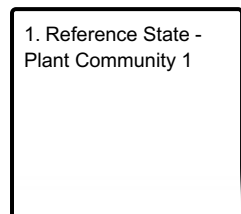
b. Revegetation of Disturbed Areas - Species indigenous to this site are recommended for any revegetation efforts. Blackbrush has medium erosion control potential, low establishment requirements and low long and short-term revegetation potential. Spiny hopsage is rated as having moderate potential for erosion control. Creosotebush may also be used to rehabilitate disturbed sites. Once established, creosotebush may improve sites for annual forbs and grasses. Nevada ephedra forms dense, spreading colonies, which make it valuable for soil stabilization. Desert needlegrass may be used for revegetation in areas of light disturbance, but it is susceptible to excessive trampling.

Transplants are more effective than direct seeding, although Nevada ephedra seedlings are very tolerant of drought and generally establish well following fall or winter seedings. Planting seedlings in late fall or early spring allows for

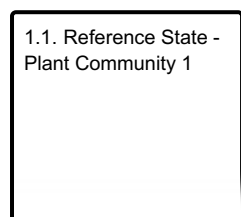
acclimation to summer conditions. Transplants that are dormant during the hot, dry season are best maintained that way rather than attempting to force them to break dormancy and undergo new vegetative growth out of season. Supplemental irrigation is recommended for the first growing season, especially if winter rainfall has been sparse. Summer annuals and non-native species should be removed from around transplants to reduce competition for water. Protection from rodents is also recommended.

State and transition model

Ecosystem states



State 1 submodel, plant communities



State 1

Reference State - Plant Community 1

Community 1.1

Reference State - Plant Community 1

The historic site potential is characterized by low, often intricately branched shrubs, 0.5 to 1 meter tall, with an open or continuous canopy. This site is dominated by blackbrush. Perennial grasses and forbs are common. Annual grasses and forbs are seasonally present. This site is stable in this condition. Approximately 70% of total production in a normal year is produced by shrub species. Approximately 20% is produced by grasses, and 10% by forbs. Major shrub species in this community are blackbrush, creosote bush, Nevada ephedra, and California buckwheat. Other shrubs listed in Plant Community Composition are present in small amounts. Each of these minor species contributes up to 5 percent of the total production in a normal year. As a group, they contribute up to 15 percent of the total production. The major grass species is desert needlegrass. Other perennial grasses listed in Plant Community Composition are present in small amounts. Each of these minor species contributes up to 3 percent of total production in a normal year. As a group, they contribute up to 10 percent of the total production. Annual grasses contribute up to 5 percent of the total production in a normal year. Several perennial and annual forbs are present on this ecosite in small amounts. Each of these species contributes up to 3% of total production in a normal year. As a group, perennial forbs contribute 5 to 10 percent of the total production. Annual forbs contribute trace amounts up to 10% of total production. 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 15% in aggregate

Forest understory. Allow no more than 3% of each species of the grasses group, and no more than 10% 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	175	280	420
Grass/Grasslike	50	80	120
Forb	25	40	60
Total	250	400	600

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	7-18%
Grass/grasslike foliar cover	2-5%
Forb foliar cover	1-3%
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%

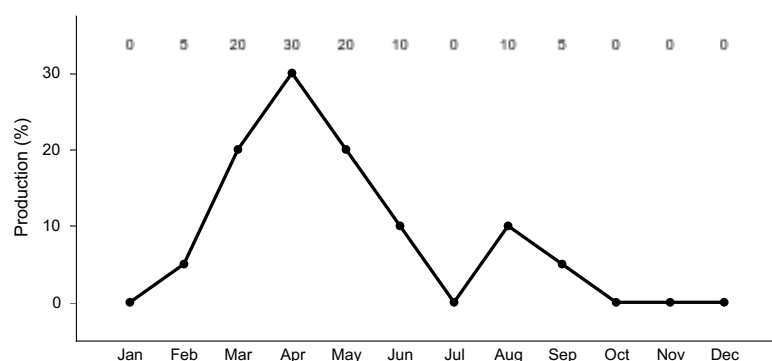


Figure 3. Plant community growth curve (percent production by month). CA3015, Creosote bush XB. Growth starts in early spring with flowering and seed set occurring by July. Dormancy occurs during the hot summer months. With sufficient summer/fall precipitation, some vegetation may break dormancy and produce a flush of growth..

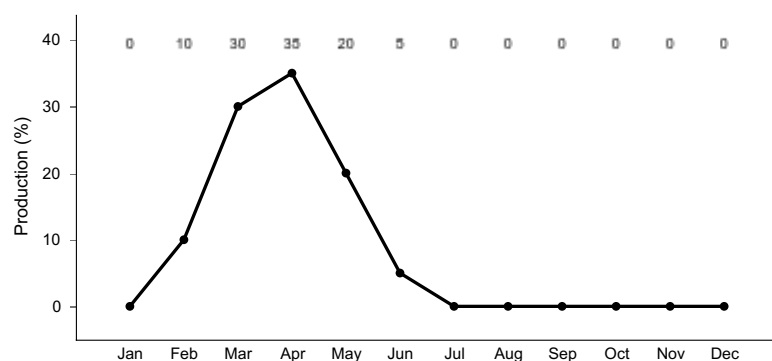


Figure 4. Plant community growth curve (percent production by month). CA3018, Blackbrush. Growth starts in late winter. Flowering and seed set occur by June. Seeds remain on the shrubs for several months. Dormancy occurs during the hot summer months..

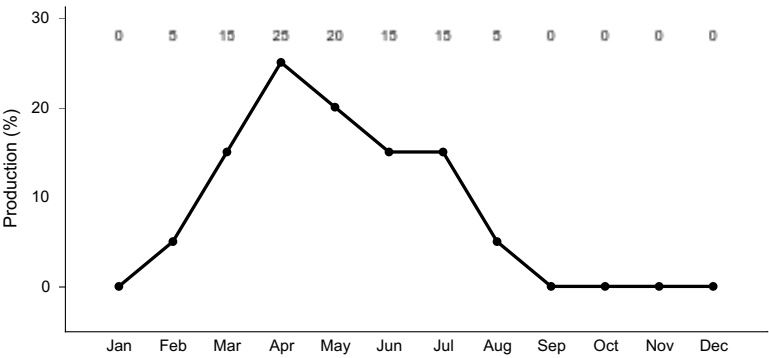


Figure 5. Plant community growth curve (percent production by month). CA3087, Desert needlegrass. Growth begins in mid-winter and continues through summer, setting seed in late summer..

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	Shrubs			175–420	
	blackbrush	CORA	<i>Coleogyne ramosissima</i>	200–240	–
	creosote bush	LATR2	<i>Larrea tridentata</i>	20–60	–
	water jacket	LYAN	<i>Lycium andersonii</i>	0–20	–
	beavertail pricklypear	OPBA2	<i>Opuntia basilaris</i>	0–20	–
	turpentinebroom	THMO	<i>Thamnosma montana</i>	0–20	–
	Joshua tree	YUBR	<i>Yucca brevifolia</i>	0–20	–
	Mojave yucca	YUSC2	<i>Yucca schidigera</i>	0–20	–
	burrobush	AMDU2	<i>Ambrosia dumosa</i>	0–20	–
	Engelmann's hedgehog cactus	ECEN	<i>Echinocereus engelmannii</i>	0–20	–
	cottontop cactus	ECPO2	<i>Echinocactus polycephalus</i>	0–20	–
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	8–20	–
	Cooper's goldenbush	ERCO23	<i>Ericameria cooperi</i>	0–20	–
	Eastern Mojave buckwheat	ERFA2	<i>Eriogonum fasciculatum</i>	8–20	–
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	0–20	–
	littleleaf ratany	KRER	<i>Krameria erecta</i>	0–14	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	0–14	–
Grass/Grasslike					
2	Grasses			50–120	
	desert needlegrass	ACSP12	<i>Achnatherum speciosum</i>	40–60	–
	Grass, annual	2GA	<i>Grass, annual</i>	1–20	–
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	0–12	–
	squirreltail	ELELE	<i>Elymus elymoides</i> ssp. <i>elymoides</i>	0–12	–
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	0–12	–
	big galleta	PLRI3	<i>Pleuraphis rigida</i>	0–12	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0–12	–
Forb					
3	Forbs			25–60	
	milkvetch	ASTRA	<i>Astragalus</i>	0–12	–
	Indian paintbrush	CASTI2	<i>Castilleja</i>	0–12	–
	pincushion flower	CHFR	<i>Chaenactis fremontii</i>	0–12	–
	cryptantha	CRYPT	<i>Cryptantha</i>	0–12	–
	phacelia	PHACE	<i>Phacelia</i>	0–12	–
	desert globemallow	SPAM2	<i>Sphaeralcea ambigua</i>	0–12	–
	brownplume wirelettuce	STPA4	<i>Stephanomeria pauciflora</i>	0–12	–

Animal community

This site provides habitat for small mammals such as antelope ground squirrels, Panamint kangaroo rats, long-tailed pocket mice, and deer mice. Black-tailed jackrabbits, coyotes, and ferral burros are also common.

This site provides habitat for lizards such as side-blotched lizard, western whiptail, desert night lizard, and desert spiny lizard. The amount of stones and gravels in the soil are a restrictive feature for burrowing reptiles such as the desert tortoise.

Birds common to this site include chukars, black-throated and sage sparrows, greater roadrunners, Empidonax species, ruby-crowned kinglets, and blue-gray gnatcatchers

Hydrological functions

Runoff is medium. Hydrologic group B - soils having moderate infiltration rates when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately well drained to well drained soils with moderately fine to moderately coarse textures. Hydrologic conditions: good - >70% ground cover (includes litter, grass and brush overstory); fair - 30 to 70% ground cover; poor <30% ground cover.

Soil Series: Kyhber
Hydrologic Group: B
Hydrologic Conditions and Runoff Curves:
Good 68; Fair 72; Poor 77

Recreational uses

This site is highly valued for open space and those interested in desert ecology. Flowering wildflowers and shrubs may also attract visitors during the spring.

Wood products

No wood products are derived from this ecosite.

Other products

Livestock grazing: season of use
Blackbrush is fair winter browse for sheep and cattle. It is better utilized by sheep and goats than cattle. Spiny hopsage is considered good to fair forage for sheep and goats, and fair to poor for cattle. Nevada ephedra is rated good to fair forage for goats and fair to poor for cattle and sheep. Creosote bush is unpalatable to livestock. Domestic sheep use creosote bush primarily for shade. Desert needlegrass produces considerable basal foliage and is good forage while young. During favorable years, annual forbs and grasses provide additional forage on this site.

Other information

Military operations (near Fort Irwin)--
Management for this site would be to protect it from excessive disturbance and maintain existing plant cover. Land clearing or other disturbances that destroy the vegetation and the soil crust and structure can result in soil compaction, reduced infiltration rates, accelerated erosion, soil blowing, and barren areas. The frequency of flash flooding may also increase with increased surface runoff and loss of vegetative cover. Rest or protect sites from further disturbance.

Inventory data references

Sampling method identified as:

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

Developed in cooperation with: Directorate of Public Works, National Training Center, Fort Irwin, and the Mojave Desert Resource Conservation District.

Type locality

Location 1: San Bernardino County, CA	
UTM zone	N
UTM northing	3926880
UTM easting	528424
Latitude	35° 29' 6"
Longitude	116° 41' 11"
General legal description	Non-sectionalized area of T16N, R3E Approximately 16 miles north of Fort Irwin West of Drinkwater Lake Quadrangle UTM 11S 0528424e 3926880n (Datum=NAS-C) San Bernardino Co., CA

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.

Recht, M.A with R.D. Nieuhaus, Inc. 1995. Final Report, 1994 Small Mammal Surveys of Selected Sites at the National Training Center Fort Irwin, CA.

Western Regional Climate Center, Desert Research Institute, Reno, Nevada
(<http://www.wrcc.dri.edu/CLIMATEDATA.html>)

Contributors

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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:**

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

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:

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

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

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

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:**

17. **Perennial plant reproductive capability:**
