USDA Natural Resources
Conservation Service

Ecological site R030XB139CA
Shallow Dry Hill 4-6 P.Z.

Accessed: 05/18/2024

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.

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

MLRA notes

Major Land Resource Area (MLRA): 030X–Mojave Basin and Range

MLRA Description:
Major Land Resource Area (MLRA) 30, Mojave Desert, is found in southern California, southern Nevada, the extreme southwest corner of Utah and northwestern Arizona within the Basin and Range Province of the Intermontane Plateaus. The climate of the area is hot and dry with mostly hyperthermic and thermic soil temperature regimes and typic-aridic soil moisture regimes. Mean annual air temperatures are between 59-68 degrees F (15-20 C) with average summer maximum temperatures between 100-115 degrees F (38-46 C) and average winter minimum temperatures between 32-59 degrees F (0-15 C). This MLRA is within the arid climate zone however steep elevational gradients contribute to microclimates where semi-arid [mean annual precipitation is greater than 8 inches (200mm)] and hyper-arid [mean annual precipitation is less than 4 inches (100mm)] islands exist. Elevations range from below sea level to over 12,000 feet (3650 meters) in the higher mountain areas. Generally above 5,000 feet, soil temperature regimes can be mesic, cryic and frigid with soil moisture regimes being xeric or ustic. Orographic effects and low elevations can create hyper-arid conditions where the soil moisture regime is aridic-aridic. Due to the extreme elevational range found within this MLRA, land resource units (LRUs) were designated to group areas within the MLRA into similar land units.

LRU Description:
The arid climate zone (XB in ESD ID) LRU is found across the eastern half of California, much of the mid-elevations of Nevada, the southernmost portions of western Utah, and the mid-elevations of northwestern Arizona. Elevations

range from 1800-5000 feet and precipitation ranges from 4-8 inches/year. Precipitation is bi-modal for most of the Mojave with precipitation occurring in winter and summer. Areas west of the 117 degree W meridian near Barstow, CA receive precipitation mainly during the winter months (Hereford et al. 2004). The soil temperature regimes are hyperthermic and thermic with a typic-aridic soil moisture regime. Vegetation includes creosote bush (Larrea tridentata), burrobush (*Ambrosia dumosa*), Mojave yucca (Yucca schidigera) Joshua tree (Yucca brevifolia), chollas, cactus, big galleta grass (Pleuraphis rigida) and several other warm season grasses. At the upper portions of the LRU, where the mean annual precipitation is between 6 to 8 inches (150-200 mm), plant production and diversity are greater and blackbrush (*Coleogyne ramosissima*) is a common dominant shrub.

Classification relationships

This ecological site is found within the Larrea tridentata Shrubland Alliance (Sawyer et al. 2009).

Ecological site concept

Colluvium and residuum derived from igneous and foliated metamorphosed material where soils are shallow and/or a shallow diagnostic horizon is present; South aspects between 2800 ft (850m) and 3525 ft (1075 m); all aspects below 2800 ft (850m).

Associated sites

R030XB077NV	**STEEP SOUTH SLOPE** This ecological site occurs on adjacent south-facing slopes. Brittlebush (Encelia farinosa) is dominant.
R030XB140CA	**Shallow Hill 4-6" P.Z.** This ecological site occurs on adjacent slopes with greater moisture availability. Burrobush (Ambrosia dumosa) and creosote bush (Larrea tridentata) are co-dominant.
R030XB156CA	**Limy 5-7" p.z. (Low Production)** This ecological site occurs on adjacent fan aprons. Creosote bush (Larrea tridentata) and burrobush (Ambrosia dumosa) are dominant.
R030XB172CA	**Warm Gravelly Shallow Hills** This ecological site occurs on adjacent warm thermic slopes with a high percentage of large rock fragments. Creosote bush (Larrea tridentata) and Parish's goldeneye (Viguiera parishii) are co-dominant with a high diversity of secondary shrubs.
R030XB193CA	**Very Shallow To Moderately Deep Gravelly Slopes** This ecological site occurs on adjacent slopes with an argillic horizon. Burrobush (Ambrosia dumosa), Nevada ephedra (Ephedra nevadensis), Parish's goldeneye (Viguiera parishii), jojoba (Simmondsia chinensis) and waterjacket (Lycium andersonii) are all important species.
R030XB218CA	**Moderately Deep To Very Deep Loamy Fan Remnants** This ecological site occurs on adjacent fan aprons. Burrobush (Ambrosia dumosa), Hall's shrubby spurge (Tetracoccus hallii), and creosote bush (Larrea tridentata) are dominant.
R030XB225CA	**Warm Sloping Pediments** This ecological site occurs on adjacent dissected pediments. Hall's shrubby spurge (Tetracoccus hallii) and burrobush (Ambrosia dumosa) are dominant.
R030XY188CA	**Slightly Alkaline, Rarely To Occasionally Flooded Ephemeral Stream** This ecological site occurs on adjacentn small ephemeral streams, and Hall's shrubby spurge (Tetracoccus hallii) and creosote bush (Larrea tridentata) are common.

Similar sites

R030XB193CA	**Very Shallow To Moderately Deep Gravelly Slopes** This ecological site occurs on soils with an argillic horizon. Production is higher, and shrub diversity is higher, with burrobush (Ambrosia dumosa), Nevada ephedra (Ephedra nevadensis), Parish's goldeneye (Viguiera parishii), jojoba (Simmondsia chinensis) and waterjacket (Lycium andersonii) all important species.
R030XB017NV	**LIMY HILL 3-5 P.Z.** This ecological site has lower production and diversity.

R030XD001CA	**Hyperthermic Dry Hills** This ecological site occurs on slopes with a hyperthermic soil temperature regime. Shrub pecies composition is similar, but production is lower, and there is a negligible grass component.
R030XB140CA	**Shallow Hill 4-6" P.Z.** This ecological site occurs on slopes with greater moisture availability. Production is higher, and burrobush (Ambrosia dumosa) is a dominant shrub.
R030XB146CA	**Volcanic Hill 5-7" P.Z.** This ecological site occurs on slopes with volcanic parent material. Eastern Mojave buckwheat (Eriogonum fasciculatum) and burrobush (Ambrosia dumosa) are co-dominant.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Larrea tridentata*
Herbaceous	Not specified

Physiographic features

This site occurs on mountain slopes, hill slopes, and steep sideslopes of fan remnants on all exposures. Elevations range from 2000 to 4500 feet. Slopes may range from 4 to 75 percent, but slopes of 8 to 30 percent are most typical. Runoff class is medium to very high.

Table 2. Representative physiographic features

Landforms	(1) Mountain slope
Flooding frequency	None
Ponding frequency	None
Elevation	610–1,372 m
Slope	8–75%
Aspect	Aspect is not a significant factor

Climatic features

The climate on this site is characterized by cool, somewhat moist winters and hot, somewhat moist summers, with approximately 60 percent of precipitation falling as rain between November and March, and approximately 30 percent falling as rain between July and October. Summer precipitation falls as heavy monsoonal events, while winter precipitation is spread out over a longer time period. The average annual precipitation ranges from 3 to 7 inches. Mean annual air temperature is 61 to 73 degrees F, and the frost free period ranges from 240 to 340 days per year. Freeze free period was not entered and defaults to zero.

Maximum and minimum monthly climate data for this ESD were generated by the Climate Summarizer (http://www.nm.nrcs.usda.gov/technical/handbooks/nrph/Climate_Summarizer.xls) using data from the following climate stations:

44405 Joshua Tree, California (Period of record = 1959 to 2011) [1]

LTHC1 Lost Horse, Joshua Tree National Park (Period of record = 1991 to 2011) [1]

49099, Twentynine Palms, California (Period of record = 1935 – 2011) [1]

The data from multiple weather were combined to most accurately reflect the climatic conditions of this ecological site. The Lost Horse and Joshua Tree weather stations have colder temperatures and less summer precipitation than this ecological site. The Twentynine Palms weather station has hotter temperatures and less total precipitation than this ecological site.

Table 3. Representative climatic features

Frost-free period (average)	360 days
Freeze-free period (average)	0 days
Precipitation total (average)	178 mm

Influencing water features

Soil features

The soils associated with this ecological site are typically very shallow to shallow over bedrock or a duripan. Soils are have high calcium carbonate accumulation. Soils are typically loamy-skeletal particle control section. Surface textures are extremely cobbly loam, extremely gravelly and very gravelly sandy loam, loam, gravel and fine sandy loam. Subsurface textures are extremely cobbly loam, very gravelly loamy sand, gravelly loam, gravelly sandy loam, and sandy clay loam. These soils are well to somewhat excessively drained with slow to moderately rapid permeability. The soils associated with this ecological site occur on mountain and hillslopes and formed from colluvium over residuum weathered from granite, mixed sources, gneiss, and basalt; or soils occur on steep sideslopes of fan remnants, and formed in alluvium derived from granite, gneiss, igneous rock, and mixed sources. Gravel-sized (less than 3 inches in diameter) surface rock fragments range from 55 to 82 percent, and larger fragments range from 2 to 15 percent. Subsurface volume of gravel-sized rock fragments (for all horizons for a depth of 65 inches) ranges from 3 to 80 percent, and larger fragments range from 0 to 50 percent.

The associated soil series that are 15 percent or greater of any one map unit are: Noble Pass (Loamy-skeletal, mixed, superactive, calcareous, thermic Lithic Torriorthents); Mekkadale (Loamy, mixed, superactive, thermic, shallow Arigidic Aridurids); Crackerjack (Loamy, mixed, superactive, thermic, shallow Cambidic Haplodurids); Sunrock (Loamy-skeletal, mixed, superactive, calcareous, hyperthermic Lithic Torriorthents); Dalvord (Loamy-skeletal, mixed, superactive, calcareous, thermic Lithic Torriorthents); Coppermine (Loamy-skeletal, mixed, superactive, thermic, shallow Typic Haplargids); Edalph (Sandy, mixed, thermic Typic Haplocalcids); and Seanna (Loamy-skeletal, mixed, superactive, calcareous, thermic, shallow Typic Torriorthents).

This site is correlated with minor components of: Crosgrain (Loamy-skeletal, mixed, superactive, thermic, shallow Typic Haplodurids); Marsite Loamy-skeletal, mixed, superactive, thermic, shallow Typic Haplodurids); Ironped (mixed, thermic, shallow Typic Torripsamments); Cambidic Haplodurids; and Typic Haplargids.

This ecological site is correlated with the following soil survey areas, map units and soil components (Soil survey area; Mapunit symbol; Component; phase; percent):

CA794 Joshua Tree National Park, California
CA794;4285;Typic Argidurids-Coppermine-Minhoyt complex, 4 to 30 percent slopes;Coppermine;;30
CA794;4031;Crosgrain-Crackerjack-Pinkcan complex, 4 to 30 percent slopes;Crackerjack;;30; Crosgrain;steep;5
CA794;3213;Dalvord-Aguilareal-Rock outcrop complex, 15 to 60 percent slopes;Dalvord;;35
CA794;4900;Rock outcrop-Aguilareal-Lostpalms complex, 15 to 60 percent slopes;Dalvord;;2
CA794;4280;Mekkadale-Edalph association, 4 to 30 percent slopes; Mekkadale;;55; Edalph;warm;25; Edalph;;10
1241;Meccapass-Seanna-Contactmine complex, 15 to 75 percent slopes;Ironped;moist;1
CA794;3440;Pacific Mesa complex, 4 to 50 percent complex;Marsite;;5
3297;Desertqueen-Contactmine-Seanna complex, 8 to 30 percent slopes;Seanna;dry;20

CA697, National Training Center, Fort Irwin, California
CA697;470;Noble Pass-Rock outcrop association, 30 to 75 percent slopes;Noble Pass;;65
CA697;502;Crackerjack-Dime association, 8 to 50 percent slopes;Crackerjack;;45
CA697;510;Blackmagic complex, 2 to 4 percent slopes;Cambidic Haplodurids;;3
CA697;505;Crackerjack-Owlshead association, 8 to 30 percent slopes;Crackerjack;;4
CA697;471;Noble Pass complex, 8 to 30 percent slopes;Noble Pass;ERODED;60
CA697;140;Rositas complex, 4 to 30 percent slopes;Sunrock;;5
CA697;170;Sunrock-Rock outcrop association, 2 to 30 percent slopes;Sunrock;steep;40

CA697;470;Noble Pass-Rock outcrop association, 30 to 75 percent slopes;Typic Haplargids;;3

Table 4. Representative soil features

Parent material	(1) Colluvium–gneiss (2) Residuum–gneiss (3) Alluvium–granite
Surface texture	(1) Extremely cobbly loam (2) Extremely gravelly sandy loam (3) Gravelly sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained to somewhat excessively drained
Permeability class	Slow to moderately rapid
Soil depth	10 cm
Surface fragment cover <=3"	58–82%
Surface fragment cover >3"	2–15%
Available water capacity (0-101.6cm)	0.51–7.11 cm
Calcium carbonate equivalent (0-101.6cm)	0–20%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–4
Soil reaction (1:1 water) (0-101.6cm)	6.6–9
Subsurface fragment volume <=3" (Depth not specified)	3–80%
Subsurface fragment volume >3" (Depth not specified)	0–50%

Ecological dynamics

Abiotic Factors

This ecological site occurs on mountain slopes, hill slopes, and steep sideslopes of fan remnants with very shallow to shallow soils. This site is associated with relatively dry landform positions. Soils range from very shallow to very deep. This site occurs on slopes that are too warm and/or too dry to support blackbrush (*Coleogyne ramosissima*) or burrobush (*Ambrosia dumosa*).

Steeper slopes experience greater degrees of water stress (Monson et al. 1992, Martre et al. 2002), and shallow skeletal soils have little water holding capacity. Creosote bush is a very long-lived, deep-rooted evergreen shrub that tends to be associated with coarse textured soils with little horizon development, and reaches greatest biomass and age on deep soils with large deep water reserves (McAuliffe 1994, Hamerlynk et al. 2002, Hamerlynk and McAuliffe 2008). On steep slopes, biomass and age are limited by erosional processes that cause shrub mortality, and by reduced deep soil water availability.

Disturbance Dynamics

The disturbances impacting this ecological site include drought, invasion by non-native species and fire.

Desert regions are characterized by low mean annual precipitation and extreme variability in the amount of precipitation received in any year or decade (Hereford et al. 2006). Thus, episodic mortality in response to periods

of drought is important in shaping desert community dynamics (Hereford et al. 2006, Miriti et al. 2007). Short-lived perennial shrubs demonstrate the highest rates of mortality (Webb et al. 2003, Bowers 2005, Hereford et al. 2006, Miriti et al. 2007), and annual species remain dormant in the soil seedbank (Beatley 1969, 1974, 1976). Long-lived shrubs and trees are more likely to exhibit branch-pruning, and or limited recruitment during drought (e.g. Hereford et al. 2006, Miriti et al. 2007), leading to reduced cover and biomass in drought-afflicted communities.

The shallow skeletal soils and dry landform positions of this ecological site reduce available soil moisture, which limits the susceptibility of this site to invasion by non-native annuals. However, microsites that are sheltered by large rock fragments and/or that receive additional run-on are susceptible to invasion by non-native annuals including red-stemmed stork's bill (Erodium cicutarum), red brome (*Bromus rubens*), and Mediterranean grass (*Schismus barbatus*). These non-native annuals may usurp space from native annuals that also depend on these microsites for establishment.

The low potential for high biomass of annual species limits the continuity of fine fuels in this site, and reduces the susceptibility of this site to fire. However, during very wet years native annuals may reach high biomass, and since this site occurs on steep slopes over which fire may rapidly move, this site may burn during conditions of extreme fire behavior. In the rare event that this ecological site does burn, a burrobush dominated community recovers relatively rapidly, and although creosote bush communities may take decades to recover to pre-burn stature (Brown and Minnich 1986, Engel and Abella 2011), the expanse of the creosote seedbank on surrounding landforms means that this ecological site is not considered at risk of transitioning to a fire-altered State.

State and transition model

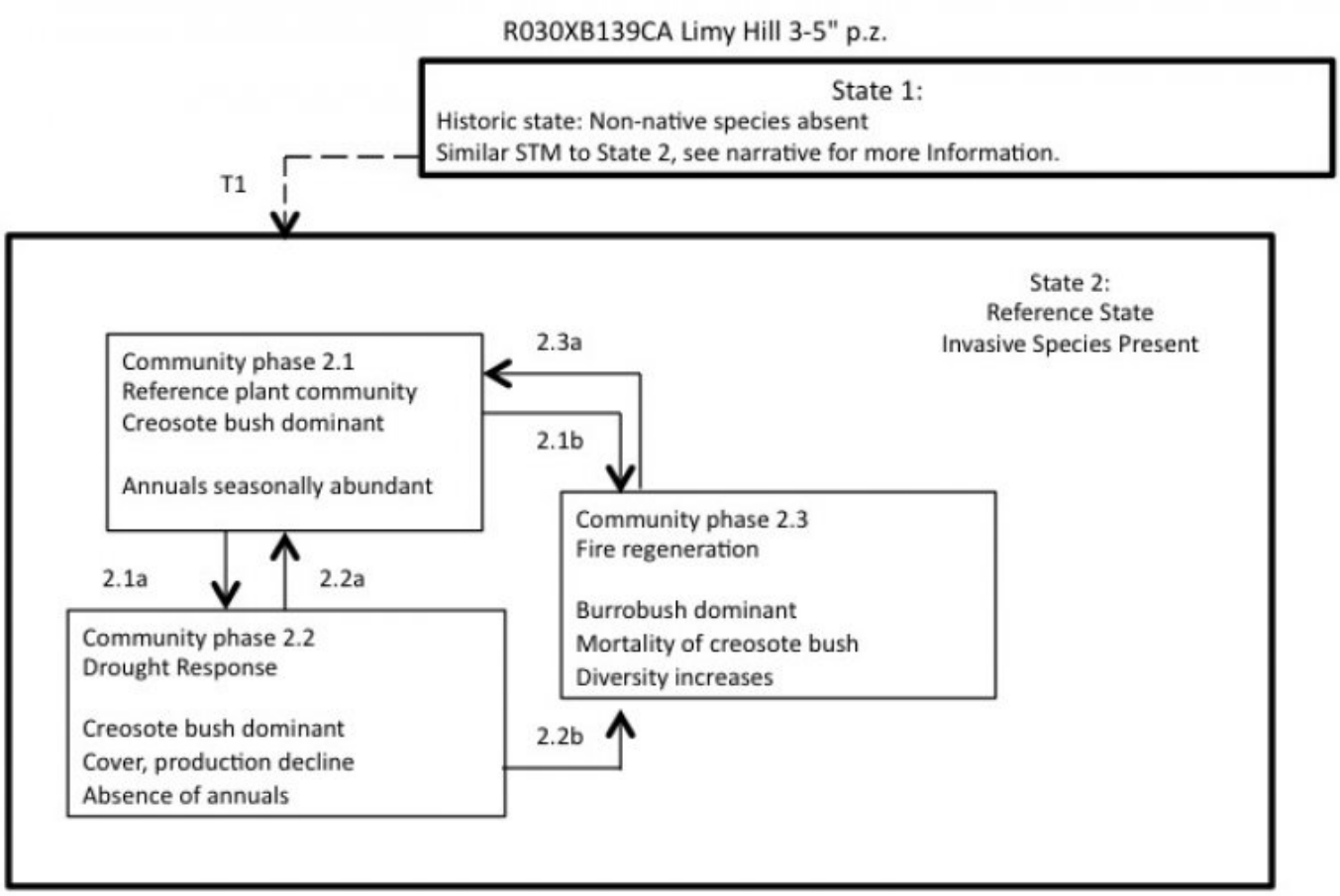

Figure 4. R030XB139CA

State 1
Historic State

State 1 represents the historic range of variability for this ecological site. This state no longer exists due to the ubiquitous naturalization of non-native species in the Mojave and Colorado Deserts. Drought and very rare fire were the natural disturbances influencing this ecological site. Data for this State does not exist, but it would have been similar to State 2, except with only native species present. See State 2 narrative for more detailed information.

State 2
Reference State

State 2 represents the current range of variability for this site. Non-native annuals, including Mediterranean grass (*Schismus barbatus*) are naturalized in this plant community. Abundance varies with precipitation, but it is at least sparsely present (as current year's growth or present in the soil seedbank).

Community 2.1
Reference Plant Community

Figure 5. Community Phase 2.1

The reference plant community is characterized by widely spaced shrubs up to 2 meters tall. Creosote bush is strongly dominant. Secondary shrubs are present at low levels and species typically present include burrobush (*Ambrosia dumosa*), white ratany (*Krameria grayi*), and littleleaf ratany (*Krameria erecta*). Cactus species are typically present, and include Englemann’s hedgehog cactus (Echinocerus engelmannii), branched pencil cholla (*Cylindropuntia ramosissima*), beavertail pricklypear (*Opuntia basilaris*), and cottontop cactus (*Echinocactus polycephalus*). Subshrubs are sparsely present, and common species include Mojave aster (*Xylorhiza tortifolia*), wishbone bush (*Mirabilis laevis* var. villosa), brownplume wirelettuce (*Stephanomeria pauciflora*), desert trumpet (*Eriogonum fasciculatum*), and desert pepperweed (*Lepidium fremontii*). Perennial grasses are sparse. The composition and abundance of annual vegetation differs from year to year, depending on the time and amount of precipitation. Common species include pincushion flower (*Chaenactis fremontii*), desert Indian wheat, bristly fiddleneck (*Amsinckia tessellata*), curvenut combseed (*Pectocarya recurvata*), and smooth desert dandelion (*Malacothrix glabrata*), although many other species may be present. The non-native annual forb redstem stork’s bill may be abundant, and the non-native annual grasses red brome and Mediterranean grass are often sparsely present.

Forest overstory. Allow no more than 3% of each species of this group, and no more than 10% in aggregate

Forest understory. Allow no more than 2% of each species of the grasses group, and no more than 10% in aggregate

Allow no more than 2% of each species of the forb group, and no more than 8% in aggregate

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	50	157	258
Forb	6	62	112
Grass/Grasslike	–	9	22
Total	**56**	**228**	**392**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	4-9%
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 7. 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..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	5	20	30	20	10	0	10	5	0	0	0

Community 2.2
Drought Response

This community phase is characterized by an overall decline in cover due branch-pruning and lack of recruitment of creosote bush, mortality of shorter lived shrubs, subshrubs and perennial grasses, and lack of emergence of annual forbs.

Community 2.3
Fire regeneration community

This community phase is characterized by the loss or severe decline of creosote bush from the plant community, since creosote bush is typically killed by fire (Brown and Minnich 1986). Burrobush has limited sprouting ability following fire, but relatively rapidly colonizes disturbed areas from adjacent seed sources, and will dominate the fire regeneration community. Native perennial forbs, perennial grasses, and annual forbs will initially increase. Species capable of resprouting after fire become more important, including Mojave yucca, range ratany, white ratany, and Nevada jointfir. By 19-20 years post-fire there is sparse cover of creosote bush and other secondary shrubs in burned communities (Engel and Abella 2011, Steers and Allen 2011).

Pathway 2.1a
Community 2.1 to 2.2

This pathway occurs with prolonged or severe drought.

Pathway 2.1b
Community 2.1 to 2.3

This pathway occurs with moderate to severe fire.

Pathway 2.2a
Community 2.2 to 2.1

This pathway occurs with time and a return to average or above average climatic conditions.

Pathway 2.2b
Community 2.2 to 2.3

This pathway occurs with moderate to severe fire, and takes place within one years of a very wet period when standing native forb biomass is still present.

Pathway 2.3a
Community 2.3 to 2.1

This community pathway occurs with time and an absence of additional disturbance.

Transition 1
State 1 to 2

This transition occurred with the naturalization of non-native species in this ecological site. Non-native species were introduced with settlement of the Southwest Desert region in the 1860s.

Additional community tables

Table 7. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Shrub/Vine					
1	**Native shrubs**			108–285	
	creosote bush	LATR2	*Larrea tridentata*	59–208	4–25
	burrobush	AMDU2	*Ambrosia dumosa*	7–34	1–3
	Engelmann's hedgehog cactus	ECEN	*Echinocereus engelmannii*	0–25	0–1
	littleleaf ratany	KRER	*Krameria erecta*	11–22	1–3
	cottontop cactus	ECPO2	*Echinocactus polycephalus*	0–22	0–2
	Nevada jointfir	EPNE	*Ephedra nevadensis*	0–22	0–2
	beavertail pricklypear	OPBA2	*Opuntia basilaris*	0–22	0–2
	turpentinebroom	THMO	*Thamnosma montana*	0–22	0–2
	Mojave yucca	YUSC2	*Yucca schidigera*	0–12	0–1
	water jacket	LYAN	*Lycium andersonii*	0–11	0–1
	white ratany	KRGR	*Krameria grayi*	0–9	0–2
	jojoba	SICH	*Simmondsia chinensis*	0–8	0–1
	branched pencil cholla	CYRA9	*Cylindropuntia ramosissima*	0–6	0–1
Forb					

2	**Native Perennial Forbs**			0–25	
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	0–26	0–2
	Mojave woodyaster	XYTO2	*Xylorhiza tortifolia*	0–22	0–2
	brownplume wirelettuce	STPA4	*Stephanomeria pauciflora*	0–18	0–1
	desert trumpet	ERIN4	*Eriogonum inflatum*	0–18	0–1
	wishbone-bush	MILAV	*Mirabilis laevis var. villosa*	0–2	0–1
3	**Native annual forbs**			0–157	
	curvenut combseed	PERE	*Pectocarya recurvata*	0–130	0–11
	desert Indianwheat	PLOV	*Plantago ovata*	0–67	0–6
	bristly fiddleneck	AMTE3	*Amsinckia tessellata*	0–45	0–4
	chia	SACO6	*Salvia columbariae*	0–27	0–2
	pincushion flower	CHFR	*Chaenactis fremontii*	0–22	0–2
	smooth desertdandelion	MAGL3	*Malacothrix glabrata*	0–22	0–1
	sowthistle desertdandelion	MASO	*Malacothrix sonchoides*	0–7	0–1
	brittle spineflower	CHBR	*Chorizanthe brevicornu*	0–1	0–1
5	**Non-native annual forbs**			0–71	
	redstem stork's bill	ERCI6	*Erodium cicutarium*	0–71	0–6
Grass/Grasslike					
4	**Native Perennial Grasses**			0–112	
	desert needlegrass	ACSP12	*Achnatherum speciosum*	0–11	0–1
	low woollygrass	DAPU7	*Dasyochloa pulchella*	0–11	0–1
	big galleta	PLRI3	*Pleuraphis rigida*	0–11	0–1
	Sandberg bluegrass	POSE	*Poa secunda*	0–11	0–1
6	**Non-native annual grasses**			0–1	
	red brome	BRRU2	*Bromus rubens*	0–1	0–1
	common Mediterranean grass	SCBA	*Schismus barbatus*	0–1	0–1

Animal community

This site provides habitat for small mammals such as
antelope ground squirrels; Panamint, Great Basin and Merriam's kangaroo rats; long-tailed pocket and little pocket mice; desert woodrat; and deer, canyon, cactus and grasshopper mice. Many small mammals browse creosotebush and consume its seeds. Black-tailed jackrabbits and coyotes may also occur.

Reptiles occurring on this site include lizards, such as the western whiptail, zebra-tailed lizard, desert collared lizard, desert spiny lizard, and side-blotched lizard; chuckwalla; and snakes such as gopher, coachwhip, western patch-nosed and speckled rattlesnake. Depth to bedrock is a restrictive feature to burrowing reptiles, such as the desert tortoise.

Birds occurring on this site include black-throated and sage sparrows, horned larks, rock wrens, and common ravens.

Season of Use- Other Mgt. Considerations: This site has limited use for livestock grazing due to the steep, rocky slopes and low productivity. Creosotebush is unpalatable to livestock.

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.

Other information

Military Operations - The steep rocky slopes restrict extensive vehicle and foot traffic. Management for this site would be to protect it from excessive disturbance and maintain existing plant cover.

Inventory data references

Sampling technique

_4_ NV-ECS-1
___ SCS-Range 417
_6_ Other

CA794 Inventory plots:
1248617205
1249712510
02242010-01
12497-40-05
FRWA-05
Paul-PF906
POWA14
POWA72

Type locality

Location 1: San Bernardino County, CA	
Township/Range/Section	T13N R2E S1
UTM zone	N
UTM northing	3900970
UTM easting	0525370
General legal description	NW1/4, Sec. 1 T13N R2E Approximately 1 mile southwest of Fort Irwin, CA Fort Irwin Quadrangle UTM 11S 0525370e 3900970n (Datum=NAS-C) San Bernardino Co., CA

Other references

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Brown, D. E. and R. A. Minnich. 1986. Fire and Changes in Creosote Bush Scrub of the Western Sonoran Desert, California. American Midland Naturalist 116:411-422.

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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)	P. Novak-Echenique
Contact for lead author	State Rangeland Management Specialist
Date	07/14/2009
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills are none to rare. Rock fragments armor the soil surface against erosion.

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2. **Presence of water flow patterns:** Water flow patterns are none to few. Rock fragments armor the soils preventing water flow patterns from developing.

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3. **Number and height of erosional pedestals or terracettes:** Pedestals and terracettes are none.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is variable (15-40%) depending on surface rock fragments.

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5. **Number of gullies and erosion associated with gullies:** Gullies are rare to none. Natural drainages may be observed on steeper side slopes.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** None

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7. **Amount of litter movement (describe size and distance expected to travel):** Litter typically remains in place. Fine litter (foliage from grasses and annual & perennial forbs) may move the distance of slope length during intense summer convection storms or rapid snowmelt events. Persistent litter (large woody material) will remain in place except during large rainfall events.

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil stability values should be 3 to 6 on most soil textures and varies depending on canopy cover.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface structure is typically medium to thick platy or weak fine granular. Soil surface colors are light and the soils have an ochric epipedon. Organic matter of the surface 2 to 3 inches is less than 1 percent.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Sparse shrub canopy and associated litter break raindrop impact.

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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):** None. Subangular blocky structure, or massive or calcic sub-surface horizons are not to be interpreted as compacted layers.

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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: Reference Plant Community: Long-lived shrubs: creosotebush, white bursage (by above ground production) and associated shrubs >

Sub-dominant: warm-season perennial grasses > perennial and annual forbs > annual grasses

Other:

Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Dead branches within individual shrubs are common and standing dead shrub canopy material may be as much as 25% of total woody canopy.

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14. **Average percent litter cover (%) and depth (in):** Litter is concentrated under shrubs and generally stays in place.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** For normal or average growing season ~75lbs/ac

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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:** Red brome, red-stem filaree, mustards, and Mediterranean grass are invaders on this site.

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17. **Perennial plant reproductive capability:** All functional groups should reproduce in normal and above-normal rainfall years.
