Ecological site R030XB141CA
Loamy 5-7" P.Z.

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.

Ecological site concept

This site occurs on alluvial fans on all exposures. Elevations are 3040 to 3100 feet. Slopes range from 0 to 4 percent.

The soils that characterize this site are moderately deep to very deep and well drained to somewhat excessively drained. They are formed in mixed alluvium predominantly from granitic sources.

Please refer to group concept R030XA022CA to view group STM concept.

Similar sites

R030XB121CA	**Calcareous Hill 5-7" P.Z.** Calcareous Hill 5-7
R030XB122CA	**Calcareous Loam 3-5" P.Z.** Calcareous Loam 3-5

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Atriplex confertifolia*
Herbaceous	(1) *Achnatherum hymenoides*

Physiographic features

This site occurs on alluvial fans on all exposures. Elevations are 3040 to 3100 feet. Slopes range from 0 to 4 percent.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan
Elevation	927–945 m
Slope	0–4%
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.

The average frost-free period is 240 to 300 days.

Table 3. Representative climatic features

Frost-free period (average)	300 days
Freeze-free period (average)	
Precipitation total (average)	178 mm

Influencing water features

Soil features

The soils that characterize this site are moderately deep to very deep and well drained to somewhat excessively drained. They are formed in mixed alluvium predominantly from granitic sources. Surface textures are very gravelly sandy loams and very gravelly loamy sands. Subsurface textures are sandy loams, gravelly sandy loams and very gravelly sands. Available water capacity is low and permeability is moderately rapid. Wind erosion hazard is slight to moderate. Effective rooting depth is 60 inches or more.

Representative_Soil Map Units
281 Thermopyl-Nasagold association, 2-4%
slopes
330 Nasagold-Livefire-Tipnat family complex,
0-2% slopes

Ecological dynamics

Please refer to group concept R030XA022CA to view group STM concept.

The historic site potential is characterized by low, intricately branched, often spiny shrubs, 0.3 to 0.6 meters tall, with a continuous, intermittent or open canopy dominated by *Atriplex confertifolia*. Perennial grasses and forbs are common. Annuals are seasonally present. The composition of the annual vegetation differs from year to year, depending on the time and amount of rainfall. This site is stable in this condition.

Successive years of above-average precipitation may result in considerable die-off of many species of native shrubs, especially shadscale. With a loss of perennial cover, this site is readily invaded by non-native annual grasses and forbs such as Arabian schismus, red brome, cheatgrass, red-stem filaree and Russian thistle.

Russian thistle, *Salsola tragus*, occurs in heavily disturbed areas. Other non-native plants include schismus, *Schismus arabicus*; red brome, *Bromus rubens*; cheatgrass, *Bromus tectorum*, and red-stem filaree, *Erodium cicutarium*.

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. Off-road vehicle use may destroy small mammal burrows. Water developments would increase the species diversity of this site.

Species indigenous to this site are recommended for any revegetation efforts. Shadscale and winterfat are effective shrubs for revegetation of disturbed sites. Winterfat can be propagated by stem cuttings. Both winterfat and shadscale can be seeded or transplanted.

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.

A good stand of Indian ricegrass is also effective in controlling wind erosion. Drilling Indian ricegrass seed in late fall at a depth of 2.5 cm is recommended. Deep planting the seed provides favorable moisture relations in the seedbed. Protection from wind deflation and protection from granivores is also recommended.

Deep ripping heavily compacted soil facilitates water infiltration, seed germination, rapid root growth and improves overall plant survival and growth.

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. Saltbush species, such as shadscale, are generally resistant to fire because of a low volatilization rate. Winterfat is either killed or top-killed by fire, depending on fire severity. Severe fire can kill the perennating buds located several inches above the ground surface and thus kills the plant. In addition, severe fire usually destroys seeds. Bud sagebrush does not resprout after fire and re-establishes itself by seed transported from adjacent sites. Indian ricegrass sustains slight damage by fire and can reestablish via seed dispersed from adjacent unburned areas.

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 representative natural plant community is Shadscale scrub or Shadscale series. This community is dominated by shadscale and Indian ricegrass. Potential vegetative composition is about 20% grasses, 10% forbs, and 70% shrubs. 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 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 2% of each species of the forbs group, and no more than 8% in aggregate

Table 4. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	78	196	275
Grass/Grasslike	22	56	78
Forb	11	28	39
Total	**111**	**280**	**392**

Table 5. Ground cover

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

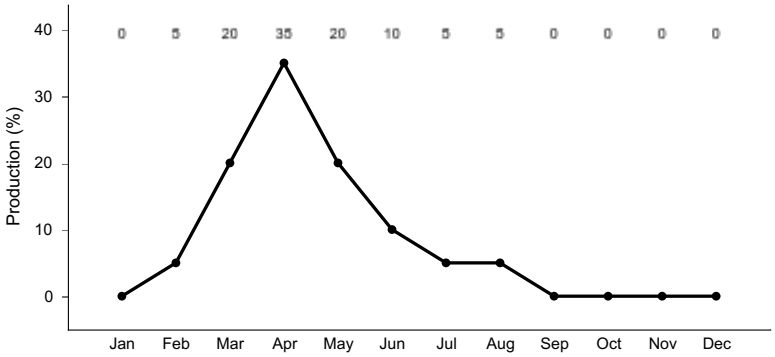

Figure 2. Plant community growth curve (percent production by month). CA3003, Shadscale. Growth starts in early spring. Flowering and seed set occur by July. Seeds stay on the shrub for several months. Dormancy occurs during the hot summer months..

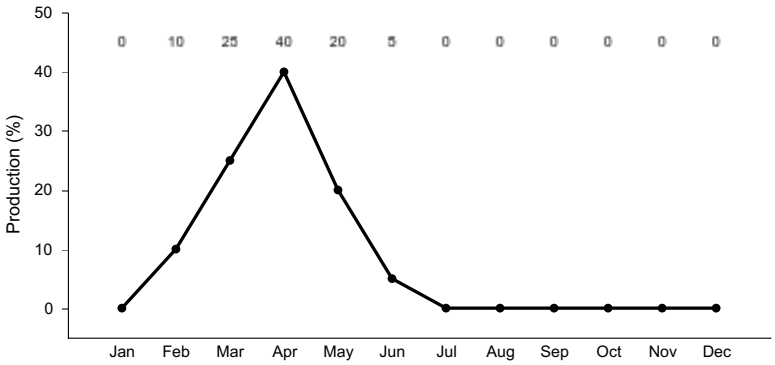

Figure 3. Plant community growth curve (percent production by month). CA3009, Winterfat. Growth starts in late winter. Flowering and seed set occur by June. Seeds remain on the shrubs for several months. Dormancy occurs during the hot summer months..

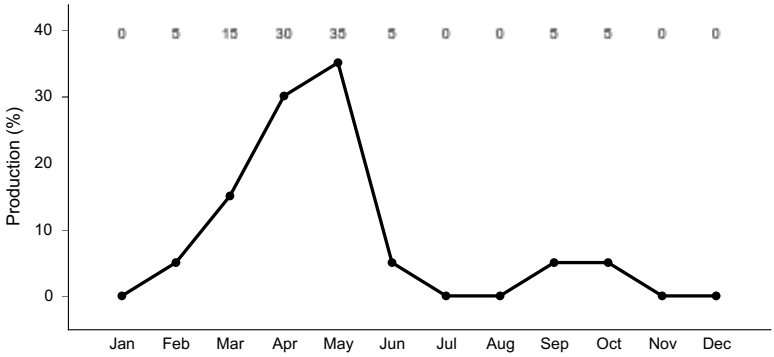

Figure 4. Plant community growth curve (percent production by month). CA3022, Indian ricegrass. Growth begins in late winter, flowering and fruiting finished by the hot summer months. Early fall rains can trigger a flush of new growth..

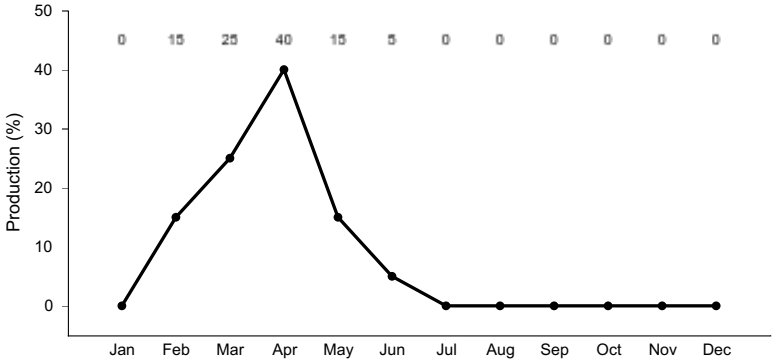

Figure 5. Plant community growth curve (percent production by month). CA3028, Bud sagebrush. Growth begins in late winter and sets seed by early summer..

Additional community tables

Animal community

This site provides habitat for small mammals such as Mojave and antelope ground squirrels; Great Basin, Merriam's and Panamint kangaroo rats; long-tailed and little pocket mice; grasshopper and deer mice; black-tailed jackrabbits and coyotes. Seeds of shadscale are readily eaten by many small mammals. Winterfat provides cover for small mammals and forage for black-tailed jackrabbits. Black-tailed jackrabbits and small mammals generally eat only the leaves, smaller branches and twigs of bud sagebrush.

Reptiles occurring on this site include the zebra-tailed lizard, western whiptail, long-nosed leopard lizard, desert horned lizard, and side-blotched lizard. The sandy soil textures are a restrictive feature for burrowing reptiles.

Birds occurring on this site include horned larks, common ravens, Black-throated and sage sparrows, Red-tailed hawks, American kestrels, greater roadrunners, and loggerhead shrikes. Seeds of shadscale are readily eaten by many songbirds.

LIVESTOCK GRAZING:
Shadscale, winterfat and bud sagebrush are considered valuable browse for cattle and sheep. Bud sagebrush is one of the first shrubs to green up in the spring and is highly palatable. Shadscale is often eaten during the early spring before spines mature. Seeds of shadscale and winterfat are readily eaten by livestock. Bud sagebrush provides valuable early browse to sheep. During favorable years, annual forbs and grasses provide additional forage. Indian ricegrass produces abundant foliage in spring and early summer. It has good forage value for sheep, cattle and horses.

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 250

Hydrological functions

Runoff is very low to 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 group C - soils having slow infiltration rates when thoroughly wetted and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture.

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

Soil Series:Thermopyl
Hydrologic Group:C
Hydrologic Conditions and Runoff Curves:
Good 79; Fair 81; Poor 85

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 - 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 disturbances.

Inventory data references

Sampling technique

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

Type locality

Location 1: San Bernardino County, CA	
Township/Range/Section	T15N R1E S33
UTM zone	N
UTM northing	3912623
UTM easting	510914
General legal description	NE 1/4 Sec. 33, T15N R1E East of Goldstone Lake Goldstone Quadrangle UTM 11S 0510914e 3912623n (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, California.

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	05/12/2025
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:**

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:

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17. **Perennial plant reproductive capability:**
