

Ecological site F030XC285NV

Pinus longaeva/Salvia dorrii ssp. dorrii var. clokeyi-Ribes
montigenum/Achnatherum lettermanii-Carex rossii

Last updated: 4/26/2024
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

Nachlinger, J. and G.A. Reese. 1996. Plant Community Classification of the Spring Mountains National Recreation Area, Clark and Nye Counties. The Nature Conservancy, Reno, Nevada. - Bristlecone Pine Series

Ecological site concept

This forest site occurs on high upper backslopes of mountains and along mountain ridgelines. At higher elevations, this site occurs primarily on southerly aspects. At lower elevations, this site will occur on all aspects. Slopes range from 30 to 75 percent. Elevations are 9000 to 11000 feet.

Please refer to group concept F030XC287NV to view the provisional STM.

Associated sites

F030XC284NV	Pinus longaeva-Pinus flexilis/Juniperus communis var. depressa/Carex rossii
R030XC028NV	ALPINE SLOPE

Similar sites

F030XC284NV	Pinus longaeva-Pinus flexilis/Juniperus communis var. depressa/Carex rossii Higher production. Bristlecone, limber pine site.
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Table 1. Dominant plant species

Tree	(1) <i>Pinus longaeva</i>
Shrub	(1) <i>Salvia dorrii</i> ssp. <i>dorrii</i> var. <i>clokeyi</i> (2) <i>Ribes montigenum</i>
Herbaceous	(1) <i>Achnatherum lettermanii</i> (2) <i>Carex rossii</i>

Physiographic features

This forest site occurs on high upper backslopes of mountains and along mountain ridgelines. At higher elevations, this site occurs primarily on southerly aspects. At lower elevations, this site will occur on all aspects. Slopes range from 30 to 75 percent. Elevations are 9000 to 11000 feet.

Table 2. Representative physiographic features

Landforms	(1) Mountain slope (2) Ridge
Elevation	9,000–11,000 ft
Slope	30–75%
Aspect	SE, S, SW

Climatic features

The Spring Mountains are under the general influence of the rain shadow created by the Sierra Nevada Mountains to the west. Pacific storm systems predominate, which bring moisture primarily as snow from October through April. The east slopes of the range receive more precipitation than the west slopes as a result of cold cyclonic storms moving moist Pacific air around the range. Winter moisture is augmented with summer precipitation from subtropical Gulf air masses that produce local thunderstorms. Winter and summer precipitation varies considerably from year to year. Temperatures also vary widely on a daily and an annual basis.

The climate on this site is characterized by subhumid continental, cool, with moist winters and common, summer thundershowers. The mean annual precipitation for this site is approximately 16 to 24 inches. The mean annual air temperature is 40 to 45 degrees F. The average growing season is about 50 to 90 days. There is no climate station associated with this site.

Table 3. Representative climatic features

Frost-free period (average)	90 days
Freeze-free period (average)	
Precipitation total (average)	24 in

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site are moderately deep, well drained soils that formed in residuum and colluvium from limestone and dolomite. There are extremely high amounts of gravel and/or stones on the soil surface and throughout the soil profile. Soils are usually moist in late winter and early spring and intermittently moist in the upper part following summer thunderstorms. They have an ustic soil moisture regime bordering on aridic and a frigid temperature regime. Soils associated with this site include Mountmummy.

Table 4. Representative soil features

Surface texture	(1) Extremely gravelly loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	20–40 in
Surface fragment cover ≤3"	60–80%
Surface fragment cover >3"	5–15%
Available water capacity (0–40in)	1–1.1 in
Calcium carbonate equivalent (0–40in)	10–80%

Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	7.4–7.8
Subsurface fragment volume <=3" (Depth not specified)	40–60%
Subsurface fragment volume >3" (Depth not specified)	10–45%

Ecological dynamics

Please refer to group concept F030XC287NV to view the provisional STM.

The amount and nature of the understory vegetation in a forestland is highly responsive of the amount and duration of shade provided by the overstory canopy. Significant changes in kinds and abundance of plants occur as the canopy changes. Some changes occur slowly and gradually as a result of normal changes in tree size and spacing. Other changes occur dramatically and quickly, following intensive harvesting, thinning or fire.

Fire Ecology:

Fire is infrequent on high-elevation sites dominated by Great Basin bristlecone pine. Fire return intervals range from 50 to 200 years. When fires do occur, they are usually small, low-severity surface fires. Individual trees are often struck by lightning but the open tree canopy and sparse understory vegetation restrict the spread of wildfire. Stand dynamics are more influenced by climate and seed dispersal patterns than by fire. Great Basin bristlecone pine, a thin-barked pine, is adapted to survive only low-severity surface fires.

Major Successional Stages of Forest Development:

HERBACEOUS: This forest community is typically not subject to naturally occurring fire. Individual trees are often struck by lightning, but the open tree canopy and sparse understory vegetation restrict the spread of wildfire. In the rare event that the woodland is burned over, the post-burn vegetation is dominated by grasses and forbs under full sunlight.

SHRUB-HERBACEOUS: Herbaceous vegetation and woody shrubs dominate the site. Various amounts of tree seedlings (less than 20 inches in height) may be present up to the point where they are obviously a major component of the vegetatal structure.

SAPLING-POLE: In the absence of disturbance, the tree seedlings develop into saplings (20 inches to 4.5 feet in height). Vegetation consists of grasses, forbs and shrubs in association with tree saplings. Tree cover ranges from 10 to 20 percent.

EARLY MATURE FOREST: The visual aspect and vegetal structure are dominated by bristlecone pine greater than 4.5 feet in height. Tree cover ranges from 20 to 30 percent.

MATURE FOREST: The visual aspect and vegetal structure are dominated by bristlecone pine that have reached or are near maximal heights for the site. Tree heights average approximately 25 feet (20 to 40 feet). Tree canopy cover ranges from 20 to 30 percent.

MATURE-DECADENT FOREST: In the absence of wildfire or other naturally occurring disturbances, the bristlecone pines on this site can become many thousands of years old. This stage is dominated by ancient bristlecone pines and standing snags of dead bristlecone. Tree cover ranges from 20 to 30 percent.

State and transition model

Ecosystem states

1. Reference Plant Community

State 1 submodel, plant communities

1.1. Reference Plant Community

State 1
Reference Plant Community

Community 1.1
Reference Plant Community

The reference plant community is dominated by Great Basin bristlecone pine with an open canopy of trees and a sparse understory. Ross's sedge and muttongrass are the principal understory grasses and grasslike plants. Clokey's sage and Spring Mountain goldenbush are common shrubs. The visual aspect and vegetal structure are dominated by bristlecone pine that have reached or are near maximal heights for the site. Tree heights average approximately 25 feet (20 to 40 feet). Average tree spacing is 20 feet and average trees/acre is 110-115. Tree canopy cover ranges from 20 to 30 percent.

Table 5. Ground cover

Tree foliar cover	1-30%
Shrub/vine/liana foliar cover	1-5%
Grass/grasslike foliar cover	1-2%
Forb foliar cover	1-2%
Non-vascular plants	0-1%
Biological crusts	0-1%
Litter	5-20%
Surface fragments >0.25" and <=3"	60-80%
Surface fragments >3"	5-15%
Bedrock	0-1%
Water	0%
Bare ground	1-20%

Table 6. Canopy structure (% cover)

Height Above Ground (Ft)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.5	1-5%	1-5%	0-1%	0-1%
>0.5 <= 1	1-5%	1-5%	1-5%	1-5%
>1 <= 2	1-5%	1-5%	—	—
>2 <= 4.5	1-5%	1-2%	—	—
>4.5 <= 13	5-15%	—	—	—
>13 <= 40	15-20%	—	—	—
>40 <= 80	0-1%	—	—	—
>80 <= 120	—	—	—	—
>120	—	—	—	—

Additional community tables

Animal community

Livestock Interpretations:

This site is typically not suited for livestock grazing because of the steep slopes, rock outcrops and lack of adequate water.

Wildlife Interpretations:

This site has low to moderate value for big game during the summer, fall and early winter, especially in areas with gooseberry or other browse species in the understory. Various songbirds, rodents, and associated predators native to the area are also found. Great Basin bristlecone pine communities are high-use habitat for small birds and mammals including chickadees, nuthatches, flycatchers, sapsuckers, finches, dark-eyed juncos, mountain bluebirds, Clark's nutcrackers and ground squirrels.

Hydrological functions

Runoff is high.

Recreational uses

This site has high aesthetic value and provides a variety of recreational opportunities such as hiking, camping, photography and bird watching.

Wood products

Great Basin bristlecone pine is harder and denser than wood of most conifers, but the species is not commercially important. Bristlecone pine has been historically used for mine and structural timbers.

Other products

Great Basin bristlecone pine is of unique biological and dendrological interest because of the great age attained by some individuals. Bristlecone pine has been used locally for mine timbers. The wood of bristlecone pine is denser and harder than that of most conifers.

Other information

There are 17 plant species of concern, 10 of which are endemic to the Spring Mountain National Recreation Area (SMNRA) associated with this ecological site. There are also 2 animal species of concern, 2 which are endemic to the SMNRA.

Type locality

Location 1: Clark County, NV	
Township/Range/Section	T19S R57E S18
UTM zone	N
UTM northing	4017680
UTM easting	623291
Latitude	36° 17' 46"
Longitude	115° 37' 36"
General legal description	Approximately 3.7 miles north of Charleston Peak on South Loop trail, Spring Mountains, Clark County, Nevada.

Other references

Fire Effects Information System (Online; <http://www.fs.fed.us/database/feis/plants/>).

USDA-NRCS Plants Database (Online; <http://www.plants.usda.gov>).

Contributors

TJ WOLFE

Approval

Kendra Moseley, 4/26/2024

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	Kendra Moseley
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:**
