USDA Natural Resources
Conservation Service

Ecological site F030XC295NV
MOUNTAIN INSET FANS

Last updated: 4/26/2024
Accessed: 05/08/2024

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.

Ecological site concept

This forest site occurs along lower mountain footslopes. Slopes range from 8 to 30 percent. Elevations range from 7000 to 9000 feet. Soils associated with this forest site are typically very deep, well drained soils that formed in alluvium and/or colluvium derived from limestone and dolomite.

This site is part of provisional group R030XC287NV.

Associated sites

F030XC251NV	**QUARTZITE SLOPES**
F030XC290NV	**SOUTH-FACING LIMESTONE SLOPES**
F030XC291NV	**NORTH-FACING LIMESTONE SLOPES**

Similar sites

F030XC293NV	**QUARTZITE SLOPES** ARTRV dominant shrub, less productive.
F030XC292NV	**LIMESTONE SLOPES** ARNO4 dominant shrub, less productive.

Table 1. Dominant plant species

Tree	(1) *Pinus ponderosa var. scopulorum*
Shrub	(1) *Amelanchier utahensis*
Herbaceous	(1) *Poa fendleriana*

Physiographic features

This forest site occurs along lower mountain footslopes. Slopes range from 8 to 30 percent. Elevations range from 7000 to 9000 feet.

Table 2. Representative physiographic features

Landforms	(1) Mountain
Flooding frequency	None
Ponding frequency	None
Elevation	7,000–9,000 ft

Slope	8–30%

Climatic features

The climate is semi-arid, with dry summers and cold, moist winters. Precipitation is greatest in the winter with a lesser secondary peak in the summer, typical of the Mojave Desert. Summer convection storms are common. Average annual precipitation is 13 to 15 inches. Mean annual air temperature is 41 to 45 degrees F. The average growing season is 50 to 150 days.

Table 3. Representative climatic features

Frost-free period (average)	150 days
Freeze-free period (average)	
Precipitation total (average)	15 in

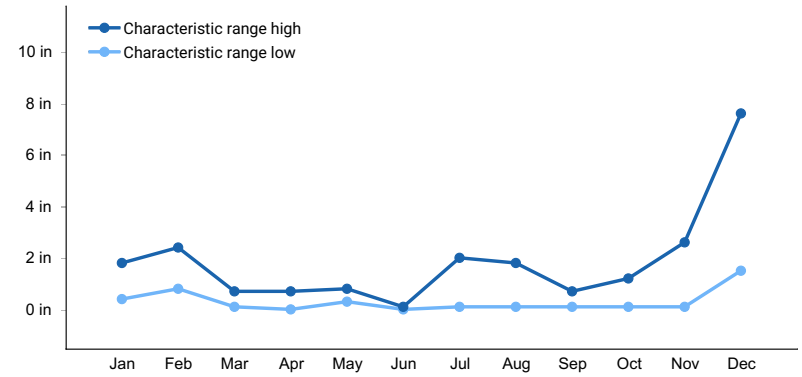


Figure 1. Monthly precipitation range

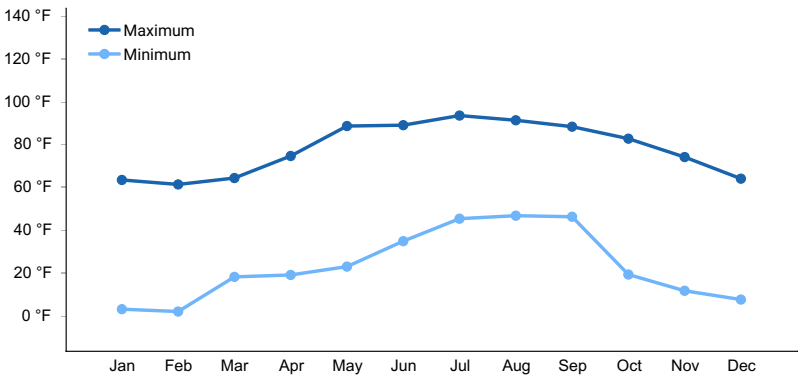


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

There are no influencing water features associated with this ecological site.

Soil features

Soils associated with this forest site are typically very deep, well drained soils that formed in alluvium and/or colluvium derived from limestone and dolomite. The soils of this site are skeletal with 50 to 80 percent rock fragments by volume, predominantly gravels in the upper horizons and cobbles and stones in the lower horizons. Soil reaction is slightly too moderately alkaline. Available water capacity is moderate. Runoff is medium and permeability is moderate. The soils have a mollic epipedon and a calcic horizon. Depth to base of mollic ranges from 30 to 72 inches. Depth to calcic horizon ranges from 4 to 20 inches. The soil series correlated to this ecological site includes Maryjane, loamy-skeletal, carbonatic, frigid Pachic Calciustolls.

Table 4. Representative soil features

Parent material	(1) Alluvium–dolomite (2) Colluvium–limestone
Surface texture	(1) Extremely gravelly silt loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately slow to moderately rapid
Soil depth	60–84 in
Surface fragment cover <=3"	5–10%
Surface fragment cover >3"	1–5%
Available water capacity (0-40in)	4–6 in
Calcium carbonate equivalent (0-40in)	11–100%
Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	6.1–8.4
Subsurface fragment volume <=3" (Depth not specified)	52–74%
Subsurface fragment volume >3" (Depth not specified)	0–7%

Ecological dynamics

The plant communities of this site are dynamic in response to changes in disturbance regimes and weather patterns. Disturbances, such as fire, play an important role in all forest ecosystems. Important processes that are regulated by fire include regeneration and reproduction, seedbed preparation, competition reduction and thinning to maintain stand health (Spurr and Barnes 1964). Rocky Mountain ponderosa pine is found throughout the West and grows on discontinuous mountains, plateaus, and canyons. A possible explanation for its limited and spotty distribution is correlated to the distribution of sites that receive summer rainfall (Oliver and Ryker 1992). Ponderosa pine seedlings are able to grow taproots that extend greater than 20 inches within a few months of germination (Oliver and Ryker 1992). This ability is essential for survival in desert ecosystems. Rocky Mountain ponderosa pine differs from variety ponderosa with its shorter needles, fewer needles per fascicle, germination rate and root growth capacity (Krugman and Jenkinson 2008).

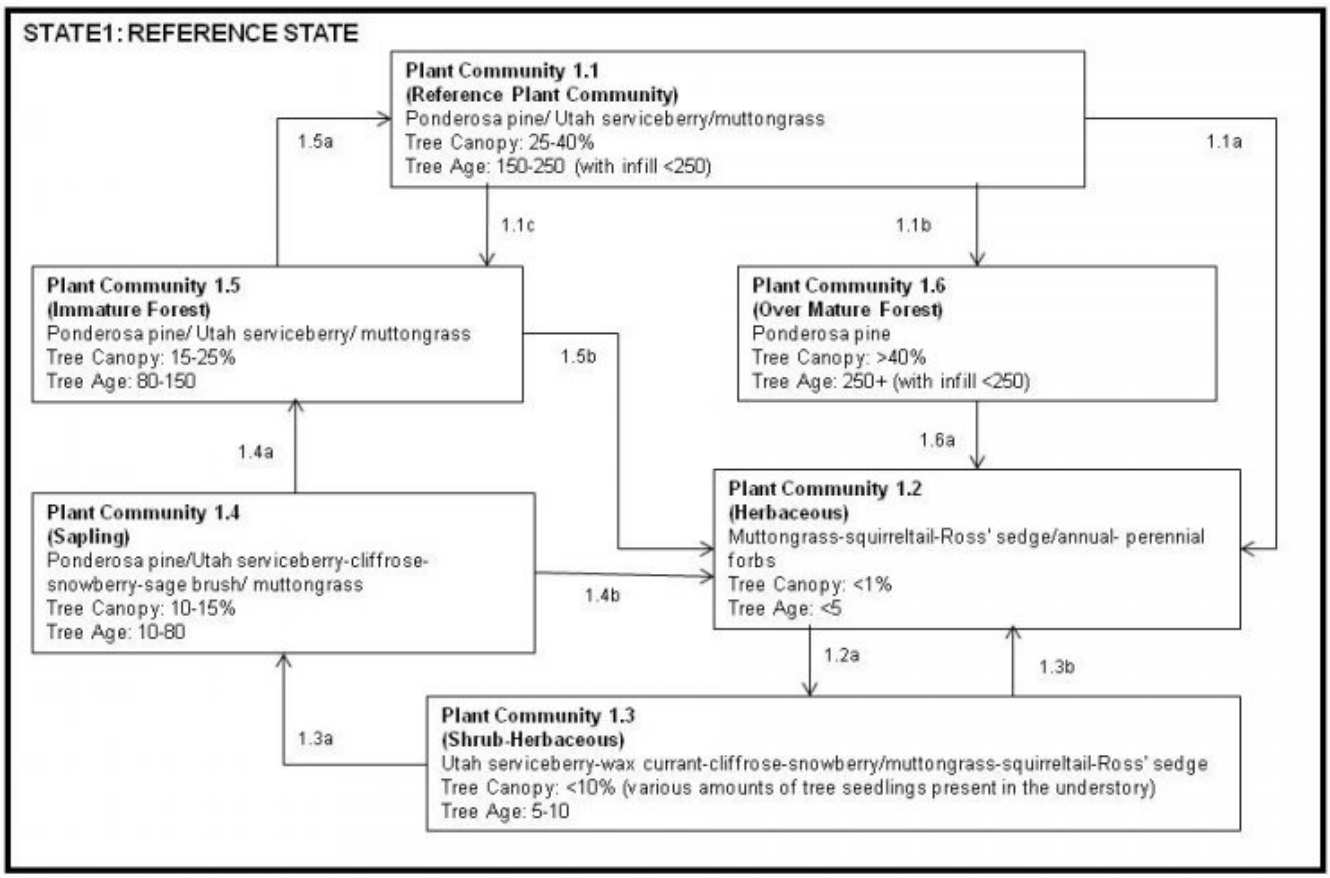
Investigation to the vast genetic diversity of *P. ponderosa* suggests there are five major geographic races, including two distinct races in variety scopulorum. Northern sources of variety scopulorum are characterized by relatively good growth and frost resistance. The southern sources, which occur in Nevada, are slower growing but also frost resistant (Krugman and Jenkinson 2008). Rocky Mountain ponderosa pine, *Pinus ponderosa* var. scopulorum has migrated into the Great Basin following the ice ages by way of the Southern Rocky Mountains. Rocky Mountain ponderosa pine never attains the size of the typical variety (*P. ponderosa* var. ponderosa).

Soils provide physical support, moisture and nutrients to the forest community. Trees have reciprocating effects on the soil. Since they tend to exist on site for extended periods of time, their roots typically extend deep into the subsoil and even into fractured bedrock influencing the rate of soil development. Considerable amounts of organic material are returned to the soil in the form of fallen litter and decaying roots. Increased organic matter on the soil surface, or litter layer, helps to keep moisture conditions more uniform. Insulation provided by the tree canopy and litter layer also reduces the temperature fluctuation from day to night (Fisher and Binkley 2002). Seedlings of ponderosa pine grow best with warm days and warm nights. Root growth of ponderosa pine is highly dependent on soil temperature. Low soil temperatures result in low metabolic activity and membrane permeability which limit water and nutrients uptake (Spurr and Barnes 1964).

Biogeochemical cycling in semi-arid forest system is controlled by moisture availability and fire. The role of water is more important in humid systems, which are largely affected by leaching. A review of the literature shows the post fire nitrogen fixation is more important than atmospheric deposition and leaching. Fire affects the nitrogen pool of a forest in two ways: 1) volatilization during the fire and 2) the influx of nitrogen fixing vegetation following the fire. Increases of nitrogen immediately after fire are attributed to the release of ammonium (NH_4^+) which takes place at temperatures above 100°C (Johnson et al. 1998). Nitrogen is considered to be a limiting nutrient in this system and the plant community will rapidly respond to inputs of nitrogen. Temporary increases in available nitrogen decrease to pre-burn levels within 5 to 12 years after fire (Johnson et al. 1998). The importance of fire and post fire nitrogen fixation will continue to increase due to changes in fire frequency driven by non-native annuals and the buildup of fuels during decades of fire suppression.

Fire Ecology: Rocky Mountain ponderosa pine is long-lived, individual trees are capable of living 700+ years. Historically, stands were open and comprised of varied age class distribution that evolved with the occurrence of frequent surface fires and the occasional stand-replacing crown fire. Surface fires reoccurred every 5 to 30 years, maintaining open-growth, park-like stands. Stand replacing fires were less common, estimates range from 60 to 160 years (Howard 1993). Mature trees are very resistant to fire. Adaptations include self-pruning branches, thick bark, thick bud scales, tight needle bunches and a deep rooting habit. Seedlings and saplings are susceptible to fire. Periodic ground fires remove heavy litter, duff and unwanted juveniles that accumulate in the forest understory. Fire also prepares the seed bed for regeneration (Howard 1993). Rocky Mtn. Juniper and white fir are intolerant of fire. Even low severity fires result in high rates of mortality. Fuel loading in stands of ponderosa pine vary depending on age class, stand structure and understory composition. In the absence of naturally reoccurring wildfire had led to large accumulations of fuels in some ponderosa pine forests and an increase of shade tolerant, less fire resistant, less desirable tree species in the understory. Low severity fires generally kill trees less than 6 inches in diameter. Trees infected with dwarf-mistletoe or other diseases are more susceptible to mortality. Muttongrass survives low severity fire, but appears to be harmed and slow to recover from severe fire. The seeds of Ross' sedge germinate after heat treatment and rhizomes commonly survive fires. Squirreltail regenerates after wildfire by sprouting from the root crown and from seed. Black sagebrush is killed by all fire severities. Reestablishment occurs solely through seed. Wax current is described as a weak sprouter this is killed by severe fire. Mountain snowberry commonly sprouts from the root crow following fire. Utah serviceberry is top killed by fire, but sprouts from root crown provided sufficient soil moisture. Stansbury cliffrose is a weak sprouter following wildfire. Survival depends on soil moisture.

State and transition model



F30XC295NV *Pinus ponderosa spp. scopulorum/Amelanchier utahensis/ Poa fendleriana*

State 1
Reference State

This state represents the natural range of variability under pristine conditions. This state is dominated by Rocky Mountain ponderosa pine with traces of Rocky Mountain juniper, singleleaf pinyon pine and white fir in the canopy. Primary natural disturbance mechanisms affecting this ecological site are wildfire and periodic drought. Timing of weather events combined with disturbance events determines plant community dynamics. Infrequent, yet periodic wildfire is presumed to be a natural factor influencing the understory of mature ponderosa pine forests. Increased mortality following drought is likely caused by a combination of drought, insect attack and disease.

Community 1.1
Reference Plant Community (Mature Forest)

Figure 3. Mature Forest

This stage is dominated by ponderosa pines that have reached or are near maximal heights for the site. Tree canopy cover ranges from 25 to 40 percent. Understory vegetation is strongly influenced by tree competition, overstory shading, duff accumulation, etc. Mature ponderosa pine trees are relatively resistant to cool, slow burning, wildfires through the understory due to their thick, insulating bark. This stage of community development is assumed to be representative of this forest site in the pristine environment.

Forest overstory. An overstory canopy cover of about 30 to 40 percent is assumed to be representative of tree dominance on this site in the pristine environment. Overstory tree canopy composition is 95 percent Rocky Mountain ponderosa pine (Pinus ponderosa var. scopulorm). White fir (Abies concolor), Rocky Mountain juniper (Juniperus scopulorum) and Utah juniper (Juniperus osteosperma) together account for the remaining 5 percent.

Forest understory. Understory vegetative composition is about 15 percent grasses, 35 percent forbs and 50 percent shrubs and young trees when the average overstory canopy is medium (25 to 40 percent). Average understory production is about 350 pounds per acre with a medium canopy cover. Understory production includes the total annual production of all species within 4.5 feet of the ground surface.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	80	140	200
Forb	70	120	170
Grass/Grasslike	30	55	75
Tree	20	35	55
Total	**200**	**350**	**500**

Community 1.2
Herbaceous

This plant community is representative of an early-seral plant community phase. Vegetation is dominated by grasses and forbs under full sunlight. Standing snags remaining after disturbance have little or no affect on the composition and production of herbaceous vegetation, but can provide important wildlife habitat. This plant community is at-risk of invasion by non-natives. Non-native species take advantage of increased available critical resources following fire or other disturbance.

Community 1.3
Shrub-Herbaceous

This community phase is dominated by herbaceous vegetation and woody shrubs. Various amounts of tree seedlings (less than 20 inches in height) may be present up to the point where they are obviously a component of the vegetal structure. Sprouting shrubs, such as Utah serviceberry, snowberry, purple sage and horsebrush, quickly

recover and provide favorable sites for establishment of other shrub seedlings.

Community 1.4
Sapling

In the absence of disturbance, the tree seedlings develop into saplings (20 inches to 4½ feet in height) with a canopy cover generally of about 15 percent. Open canopy allows understory vegetation to be dominated by grasses, forbs and shrubs, in association with tree saplings.

Community 1.5
Immature Forest

The visual aspect and vegetal structure are dominated by ponderosa pine greater than 4.5 feet in height. Young ponderosa pine is very susceptible to fire at this stage. Seedlings and saplings of ponderosa pine are common in the understory. Dominants are the tallest trees on the site; co-dominants are 65 to 85 percent of the highest of dominant trees. Understory vegetation is moderately influenced by a tree overstory canopy of about 15 to 25 percent. Utah serviceberry and other shrubs serve as nurse plants for ponderosa pine seedlings.

Community 1.6
Over-mature Forest

This stage is dominated by ponderosa pines that have reached maximal heights for the site. Understory vegetation is reduced due to tree competition, overstory shading, duff accumulation, etc. Few seedlings or saplings of ponderosa pine are found in the understory. Where white fir grows with ponderosa pine this community phase is characterized by an over abundance of suppressed white fir seedlings and saplings in the understory.This plant community experiences more runoff and less infiltration during precipitation events and is at-risk of soil loss due to surface erosion. Loss of understory vegetation reduces inputs of organic matter, water storage and soil stability.

Pathway 1.1a
Community 1.1 to 1.2

Wildfire, disease, insect attack and/or prolonged drought.

Pathway 1.1c
Community 1.1 to 1.5

Thinning partial harvest, partial mortality from pest attack or other small scale disturbance.

Pathway 1.1b
Community 1.1 to 1.6

Absence from disturbance, continued growth and fire suppression.

Pathway 1.2a
Community 1.2 to 1.3

Absence from disturbance and natural regeneration over time.

Pathway 1.3b
Community 1.3 to 1.2

Wildfire, disease, insect attack and/or prolonged drought.

Pathway 1.3a
Community 1.3 to 1.4

Absence from disturbance and natural regeneration over time.

Pathway 1.4b
Community 1.4 to 1.2

Wildfire, disease, insect attack and/or prolonged drought.

Pathway 1.4a
Community 1.4 to 1.5

Absence from disturbance and natural regeneration over time.

Pathway 1.5a
Community 1.5 to 1.1

Absence from disturbance and natural regeneration over time.

Pathway 1.5b
Community 1.5 to 1.2

Wildfire, insect attack, disease and/or prolonged drought.

Pathway 1.6a
Community 1.6 to 1.2

Wildfire, insect attack, disease and/or prolonged drought.

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Primary Grasses/Grasslikes**			30–70	
	muttongrass	POFE	*Poa fendleriana*	18–35	–
	bluebunch wheatgrass	PSSP6	*Pseudoroegneria spicata*	3–18	–
	Ross' sedge	CARO5	*Carex rossii*	3–18	–
	squirreltail	ELEL5	*Elymus elymoides*	3–18	–
Forb					
2	**Primary forbs**			75–175	
	rosy pussytoes	ANRO2	*Antennaria rosea*	18–35	–
	Nuttall's linanthus	LENUP	*Leptosiphon nuttallii ssp. pubescens*	18–35	–
	pinewoods lousewort	PESE2	*Pedicularis semibarbata*	18–35	–
	San Francisco campion	SIVEA	*Silene verecunda ssp. andersonii*	18–35	–
	stemless mock goldenweed	STAC	*Stenotus acaulis*	18–35	–
	firecracker penstemon	PEEAE2	*Penstemon eatonii ssp. eatonii*	3–18	–
	white sagebrush	ARLU	*Artemisia ludoviciana*	3–18	–
	Newberry's milkvetch	ASNEC	*Astragalus newberryi var. castoreus*	3–18	–
	bighead dustymaiden	CHMA	*Chaenactis macrantha*	3–18	–
	sulphur-flower buckwheat	ERUM	*Eriogonum umbellatum*	3–18	–
Shrub/Vine					
3	**Primary shrubs**			75–125	
	Utah serviceberry	AMUT	*Amelanchier utahensis*	35–88	–
	black sagebrush	ARNO4	*Artemisia nova*	18–35	–
	Stansbury cliffrose	PUST	*Purshia stansburiana*	18–35	–
	mountain snowberry	SYOR2	*Symphoricarpos oreophilus*	18–35	–
4	**Secondary shrubs**			30–50	
	yellow rabbitbrush	CHVI8	*Chrysothamnus viscidiflorus*	3–18	–
	wax currant	RICE	*Ribes cereum*	3–18	–
	purple sage	SADO4	*Salvia dorrii*	3–18	–
	spineless horsebrush	TECA2	*Tetradymia canescens*	3–18	–
Tree					
5	**evergreen**			25–50	
	white fir	ABCO	*Abies concolor*	3–18	–
	Utah juniper	JUOS	*Juniperus osteosperma*	3–18	–
	Rocky Mountain juniper	JUSC2	*Juniperus scopulorum*	3–18	–
	ponderosa pine	PIPOS	*Pinus ponderosa var. scopulorum*	3–18	–

Table 7. Community 1.1 forest overstory composition

Common Name	Symbol	Scientific Name	Nativity	Height (Ft)	Canopy Cover (%)	Diameter (In)	Basal Area (Square Ft/Acre)
Tree							
ponderosa pine	PIPO	*Pinus ponderosa*	Native	–	90–95	–	–
white fir	ABCO	*Abies concolor*	Native	–	1–5	–	–
Rocky Mountain juniper	JUSC2	*Juniperus scopulorum*	Native	–	1–5	–	–
Utah juniper	JUOS	*Juniperus osteosperma*	Native	–	1–5	–	–

Animal community

Livestock Interpretations: This site has limited suitability for livestock grazing although grazing animals may use this site during the hot summer months. Herbaceous forage production is quite low and the site is not easily accessed because of steep slopes and lack of adequate water resources. The amount and nature of the understory vegetation in a forestland is highly dependent on the amount and duration of shade provided by the overstory canopy. Significant changes in kinds and abundances of plants occur as the canopy changes, often regardless of grazing use.
Muttongrass is a valuable forage resource. It has been rated excellent forage for domestic cattle and horses. Ross's sedge value as a forage plant varies depending on the site. It has been rated fair for domestic sheep, horses and cattle. Bottlebrush squirreltail is palatable to domestic livestock. Winter months show greatest use and it generally increases under heavy grazing pressure. Indian ricegrass accounts for a small amount of total production on this site, but is highly palatable to all classes of livestock. Dominant shrubs provide additional foraging resources on this ecological site. Utah serviceberry serves as good forage late in the winter and early in the spring, becuase it leafs out earlier than many other species. Snowberry also leafs out early and it therefore heavily used in the spring. Snowberry is capable of sprouting and therefore can persist and even increase under moderate browsing pressure. Prolonged browsing can result in reduced densities. Wax currant provides poor to fair browse for domestic livestock, although it can be of great importance when little else is available. Stansbury cliffrose provides important winter browse for domestic livestock. Moderate utilization has been shown to growth and seed production. Livestock will eat rabbitbrush in the late fall and winter when more desirable types of forage have been depleted.
Stocking rates vary with such factors as kind and class of grazing animal, season of use and fluctuations in climate. Actual use records for individual sites, a determination of the degree to which the sites have been grazed, and an evaluation of trend in site condition offer the most reliable basis for developing initial stocking rates. The forage value rating is not an ecological evaluation of the understory as is the range condition rating for rangeland. The forage value rating is a utilitarian rating of the existing understory plants for use by specific kinds of grazing animals.

Wildlife Interpretations: This area is high-use habitat for a variety of birds including, owls, goatsuckers, swifts, hummingbirds, wood peckers, flycatchers, nuthatches, thrushes and finches. It also has moderate forage value for big game during the summer, fall, and early winter, especially in areas with wax current other browse species in the understory. It is used occasionally by various other song birds, rodents and associated predators natural to the area. Many upland wildlife species find valuable foraging and habitat resources on this ecological site. Several wildlife species utilize bottlebrush squirreltail. It provides important forage for ground squirrels, cottontails and black-tailed jackrabbits and less important forage for mule deer. Muttongrass provides good forage for sheep, elk and deer. Pronghorn antelope commonly feed on remaining seedheads during the winter. The seeds and leaves are also used by a variety of birds. Ross's sedge provides occasional forage for mule deer and pronghorn antelope. Indian ricegrass is preferred by pronghorn antelope, jackrabbits and many species of birds. It is moderately utilized by many other species of wildlife. Dominant shrubs provide additional foraging resources on this ecological site. Serviceberry is frequenty used by wildlife in the early spring. It is also an important food source for many bird species throughout the winter. Mountain snowberry provides important forage for elk and deer on high elevation summer ranges. Snowberry is one of the first species to leaf out and therefore it is heavily used in the spring. Snowberry is capable of sprouting and therefore can persist and even increase under moderate browsing pressure. Prolonged browsing can result in reduced densities. Wax currant provides food and cover for wildlife. It is only fair to poor browse for deer, but is important on ranges were little else is available. Stansbury cliffrose is important browse species for mule deer, pronghorn, desert bighorn sheep, game birds and songbirds Rabbitbrush is an important source of browse for wildlife species. It is used by mule deer, pronghorn, jack rabbits, other small mammals, and upland birds. Rocky Mountain juniper provides fair winter forage, excellent escape cover and good fawning cover.

White fir provides spring forage for bighorn sheep and mule deer and good cover for many other wildlife species.

Hydrological functions

The soils associated with this site are characterized by medium runoff and moderate permeability. Potential for sheet and rill erosion can be severe depending on slope and amount of bare ground.

Recreational uses

Aesthetic value is derived from the diverse floral and faunal composition and the colorful flowering of wild flowers and shrubs during the spring and early summer. This site offers rewarding opportunities for photography and nature study. This site is used for camping and hiking and has potential for upland and big game hunting.

Wood products

Fuelwood Production: 48 to 65 cords per acre for stands averaging 35 to 50 feet in height and 200 years of age with a medium canopy cover (USDA 1935). There are about 213,750 gross British Thermal Units (BTUs) heat content per cubic foot of ponderosa pine wood. Solid wood volume in a cord varies but usually ranges from 65 to 90 cubic feet. Assuming an average of 75 cubic feet of solid wood per cord, there are about 16 million BTUs of heat value in a cord of ponderosa pine wood.

Other products

The wood of ponderosa pine is a valuable lumber species. Historically, the oleoresin, or pitch, of ponderosa pine has been a source of turpentine (Lanner 1984). Ponderosa pine communities are important to wildlife and domestic livestock. They provide critical habitat for a variety of birds and an important food source for many rodents and small mammals (Howard 1993). Open stands of ponderosa pine provide ample grazing and browsing opportunities in the understory.

MANAGEMENT GUIDES AND INTERPRETATIONS
1. LIMITATIONS AND CONSIDERATIONS
a. Potential for sheet and rill erosion is
slight to moderate depending on slope.
b. Severe equipment limitations due to steep
slopes.

2. ESSENTIAL REQUIREMENTS
a. Protect soils from accelerated erosion.
b. Manage for protection of wildlife habitat.
c. Adequately protect from uncontrolled burning.

3. SILVICULTURAL PRACTICES
a. Traditional silvicultural treatments, such as harvest cutting, are not reasonably applied on this site due to poor site quality and severe limitations for equipment and tree harvest.
This site has potential for using hand-crews for thinning and improvement cuttings to remove diseased and overcrowded trees. Improvement cuttings cut selectively or in small patches size (dependent upon site conditions) to enhance forage production, wildlife habitat and forest health.
1) Thinning and improvement cutting - Removal of poorly formed, diseased and low vigor trees for fuelwood.
2) Slash Disposal - broadcasting slash improves reestablishment of native understory herbaceous species and establishment of seeded grasses and forbs after tree harvest.
b. Fire hazard – Fire is usually not a problem in well-managed, mature stands.

Table 8. Representative site productivity

Common Name	Symbol	Site Index Low	Site Index High	CMAI Low	CMAI High	Age Of CMAI	Site Index Curve Code	Site Index Curve Basis	Citation
ponderosa pine	*PIPO*	40	55	30	42	100	–	–	

Type locality

Location 1: Clark County, NV	
Township/Range/Section	T15S R60E S35
UTM zone	N
UTM northing	4050498
UTM easting	658899
Latitude	36° 35′ 12″
Longitude	115° 13′ 25″
General legal description	Sheep Peak USGS 7.5 minute topographic quadrangle. Approximately 1.5 mi from Sheep Peak in the Sheep Range found in the Desert National Wildlife Refuge. North-east of Highway 95 and west of Highway 93 Clark County, Nevada.

Other references

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Contributors

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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	05/08/2024
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:**