# Ecological site group ESG048A25
# Breaks

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## Key Characteristics

- Uplands
- <75% bedrock outcrop
- Surface SAR <8, or Subsurface EC <8, or Surface EC <4
- Gypsum <5% surface and <10% subsurface
- EC <1.5 surface or <2 subsurface
- slope >35% & >40% surface rock - 34 soil components
- Uplands
- <75% bedrock outcrop
- Gypsum <5% surface, gypsum <10% subsurface, surface SAR <8, subsurface EC <8, and surface EC <4.
- EC<1.5 surface or <2 subsurface
- slope >35% & >40% surface rock AND soil moisture regime of Udic or Ustic - 34 soil components

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.

## Physiography

This ESG is located on mountain slopes.

## Soil features

This ESG is characterized by slop >35% & >40% surface rock.

## Vegetation dynamics

The modal ecological site for this ESG is F048AY330UT - Upland Shallow Stony Loam (Two-Needle Pinyon/Douglas Fir).

## Major Land Resource Area

MLRA 048A
Southern Rocky Mountains

## Subclasses

- F048AY330UT–Upland Shallow Stony Loam (Two-Needle Pinyon /Douglas Fir)
- F048AY475UT–Mountain Very Steep Stony Loam (Douglas Fir)
- F048AY912CO–Lodgepole Pine
- F048AY918CO–Spruce-Fir Woodland
- R048AA250CO–Subalpine Loam Gunnison Basin LRU
- R048AY237CO–Stony Loam
- R048AY304CO–Alpine Slopes
- R048AY466UT–Mountain Very Steep Loam (Salina Wildrye)

## Correlated Map Unit Components

20976114, 20987250, 20987302, 21232352, 21232401, 21232317, 21232277, 21359481, 21359542, 21359614, 21359549, 21359495, 21663998, 21663946, 21664185, 21664187, 21664122, 21664198, 21979310, 21979312, 21979400, 21980163, 21980363, 21980362, 21980366, 21980364, 21980381, 21980394, 21980398, 21980502, 21407191, 21407857, 21826038

## Stage

Provisional

## Contributors

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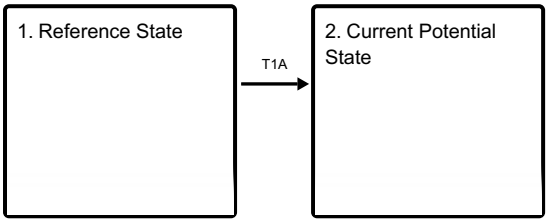
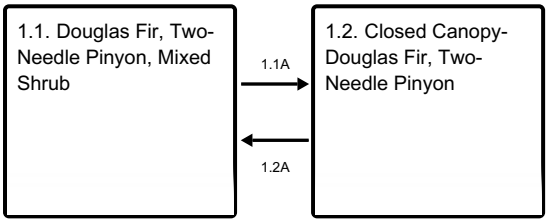
## State and transition model

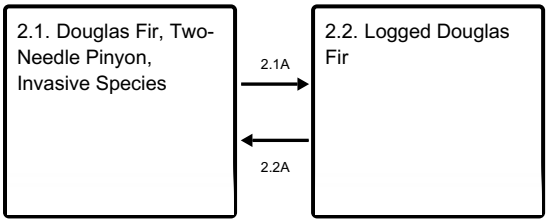
**Ecosystem states**




**State 1 submodel, plant communities**




**State 2 submodel, plant communities**




## State 1
## Reference State

This state describes the biotic communities that may become established on this ecological site if all successional sequences are completed under natural disturbance conditions. The reference state is generally dominated by an overstory canopy of Douglas fir. Two-needle-pinyon often acts as a co-dominate species, lesser amounts of Utah juniper may also be present. All age classes of Douglas fir are present in the reference state. Alderleaf mountain mahogany is the dominate shrub species. Bluebunch wheatgrass, Salina wildrye and Geyer sedge are the most common grass or grasslike species. Other native grasses, forbs, and shrubs may produce significant composition in the plant community. The primary disturbance mechanisms are overstory canopy density, weather fluctuations, and fire or lack of fire. The reference state is self sustaining and resistant to change due to a high resistance to natural disturbances and a high resilience following those disturbances. When natural disturbances occur, the rate of recovery can be quite variable. Typically in the reference state, this ecological site will naturally fluctuate between community phases 1.1 and 1.2. Reference State: Plant communities influenced by canopy density, long term weather fluctuations, and periodic fire. Indicators: A community dominated by Douglas fir, two-needle pinyon, Utah juniper and alderleaf mountain mahogany. The density of the overstory canopy determines the amount and composition of the other native perennial grasses, grasslikes and forbs that may be present. Feedbacks: Natural

fluctuations in weather patterns that allow for a self sustaining Douglas fir, two-needle pinyon, Utah juniper, alderleaf mountain mahogany and native grass and grasslike community. Insect herbivory, more frequent fires, or other disturbances that may allow for the establishment of invasive species. At-risk Community Phase: All communities are at risk when native plants are stressed and nutrients become available for invasive plants to establish. Trigger: The establishment of invasive plant species.

### Community 1.1
### Douglas Fir, Two-Needle Pinyon, Mixed Shrub

This community phase is characterized by an overstory canopy of Douglas fir and two-needle pinyon, lesser amounts of Utah juniper are also present. Alderleaf mountain mahogany, Utah serviceberry and mountain snowberry are the most common understory shrubs. Commonly occurring grasses and grasslikes include bluebunch wheatgrass, Salina wildrye and Geyer sedge. Other perennial grasses, shrubs, and forbs are also often present. Air dry composition of this site is approximately 15 percent grasses, 10 percent forbs, 25 percent shrubs and 50 percent trees. Bare ground is variable (5-30%) depending on litter and biological crust cover, which are also variable (10-40%) and surface rock fragments (0-50%). Biological crusts can vary from sites dominated by light cyanobacteria in the plant interspaces, with occasional moss and lichen pinnacles under shrub canopies, to those dominated by lichen and moss pinnacles as well as cyanobacteria in the site interspaces.

### Community 1.2
### Closed Canopy-Douglas Fir, Two-Needle Pinyon

This community phase is characterized by an dense overstory canopy of Douglas fir and two-needle pinyon, lesser amounts of Utah juniper are also present. Alderleaf mountain mahogany, Utah serviceberry and mountain snowberry are the most common understory shrubs. Grasses and grasslikes are much reduced or missing. There present they may include bluebunch wheatgrass, Salina wildrye and Geyer sedge. Other perennial grasses, shrubs, and forbs may also be present in small amounts. Air dry composition of this site is approximately 5 percent grasses, 5 percent forbs, 10 percent shrubs and 80 percent trees. Bare ground is variable (5-30%) depending on litter and biological crust cover, which are also variable (10-40%) and surface rock fragments (0-50%). Biological crusts can vary from sites dominated by light cyanobacteria in the plant interspaces, with occasional moss and lichen pinnacles under shrub canopies, to those dominated by lichen and moss pinnacles as well as cyanobacteria in the site interspaces.

### Pathway 1.1A
### Community 1.1 to 1.2

This community pathway occurs when long-term drought and/or extended periods without fire allows canopies of Douglas fir, two-needle pinyon and Utah juniper to significantly increase. This closed canopy causes understory vegetation to be reduced or nearly eliminated from the site. Drought alone can also reduce native perennial grass production and eventually eliminate them from the system.

### Pathway 1.2A
### Community 1.2 to 1.1

This community pathway occurs when weather patterns return to within normal ranges and fire reduces or removes Douglas fir, two-needle pinyon and Utah juniper, significantly opening the sites canopy. Insect damage on two-needle pinyon can also cause it to be reduced on this site. This more open canopy allows understory vegetation to increase and under some circumstances, flourish on the site.

## State 2
## Current Potential State

The current potential state is similar to the reference state, however invasive species are now present in all community phases. This state describes the biotic communities that may become established on this ecological site if all successional sequences are completed under natural disturbance conditions. The current potential state is generally dominated by an overstory canopy of Douglas fir where logging has not occurred. Two-needle-pinyon often acts as a co-dominate species, lesser amounts of Utah juniper may also be present. All age classes of

Douglas fir are present in the non-logged current potential state. Alderleaf mountain mahogany is the dominate shrub species. Bluebunch wheatgrass, Salina wildrye, cheatgrass and Geyer sedge are the most common grass or grasslike species. Other introduced and native grasses, forbs, and shrubs may produce significant composition in the plant community. The primary disturbance mechanisms are overstory canopy density, weather fluctuations, livestock grazing use, logging and fire or lack of fire. The current potential state is still self sustaining but has a lower resistant to change due to a reduced resistance to disturbances. When disturbances do occur, the rate of recovery can be highly variable. Current Potential State: Plant communities influenced by livestock grazing, logging, wildlife browsing, insect herbivory, weather fluctuations, fire periods and surface disturbances. Indicators: A community dominated by Douglas fir, two-needle pinyon, Utah juniper and alderleaf mountain mahogany. The density of the overstory canopy determines the amount and composition of the other introduced and native grasses, grasslikes and forbs that may be present. Feedbacks: Natural fluctuations in weather patterns that allow for a self sustaining Douglas fir, two-needle pinyon, Utah juniper, alderleaf mountain mahogany and native grass and grasslike community. Insect herbivory, more frequent fires, or other disturbances that may allow for the increase of invasive species. At-risk Community Phase: All communities are at risk when native plants are stressed and nutrients become available for invasive plants to establish.

### Community 2.1
### Douglas Fir, Two-Needle Pinyon, Invasive Species

This community phase is characterized by an overstory canopy of Douglas fir and two-needle pinyon, lesser amounts of Utah juniper are also present. Alderleaf mountain mahogany, Utah serviceberry and mountain snowberry are the most common understory shrubs. Invasive species are now present in the understory community. Commonly occurring grasses and grasslikes include bluebunch wheatgrass, Salina wildrye cheatgrass and Geyer sedge. Other annual and perennial grasses, shrubs, and forbs may also be present. Air dry composition of this site is approximately 15 percent grasses, 10 percent forbs, 20 percent shrubs and 55 percent trees. Bare ground is variable (5-30%) depending on litter and biological crust cover, which are also variable (10-40%) and surface rock fragments (0-50%). Biological crusts can vary from sites dominated by light cyanobacteria in the plant interspaces, with occasional moss and lichen pinnacles under shrub canopies, to those dominated by lichen and moss pinnacles as well as cyanobacteria in the site interspaces.

### Community 2.2
### Logged Douglas Fir

This community phase occurs when the mature Douglas fir and, at times, two-needle pinyon are harvested from the site. Immature trees of both species are still present, as well as, any Utah juniper found on the site. Alderleaf mountain mahogany, Utah serviceberry and mountain snowberry are the most common understory shrubs. Invasive species are present in the understory community and may increase following logging. Commonly occurring grasses and grasslikes include bluebunch wheatgrass, Salina wildrye cheatgrass and Geyer sedge. Other annual and perennial grasses, shrubs, and forbs may also be present. Air dry composition of this site is approximately 15 percent grasses, 10 percent forbs, 30 percent shrubs and 45 percent trees. Bare ground is variable (5-30%) depending on litter and biological crust cover, which are also variable (10-40%) and surface rock fragments (0-50%). Biological crusts can vary from sites dominated by light cyanobacteria in the plant interspaces, with occasional moss and lichen pinnacles under shrub canopies, to those dominated by lichen and moss pinnacles as well as cyanobacteria in the site interspaces.

### Pathway 2.1A
### Community 2.1 to 2.2

This community pathway occurs when the site is logged, removing mature Douglas fir and,at times, two-needle pinyon. This harvest when in combination with improper livestock grazing and/or the lack fire can cause the understory vegetation to be highly variable. Under some circumstances understory vegetation can be reduced or nearly eliminated from the site.

### Pathway 2.2A
### Community 2.2 to 2.1

This community pathway occurs when time combined with normal weather patterns allow Douglas fir and two-

needle pinyon slowly increase, eventually restoring their dominance in the community. Insect damage on two-needle pinyon can slow its recovery on this site.

### Transition T1A
### State 1 to 2

This transitional pathway occurs when any combination of improper livestock grazing and logging allows non-native, invasive species to invade the site, the perennial herbaceous community is often reduced allowing species such as cheatgrass, Russian thistle and other weeds to become established. Broom snakeweed may also increase during this time. Once invasive species occupy the site, a threshold has been crossed. Cheatgrass, however, has been known to become established in healthy communities on this site.

### Citations