# 11020
# Colorado Plateau Pinyon-Juniper Shrubland

BpS Model/Description Version: Aug. 2020

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**Vegetation Type**
Shrubland

**Map Zone**
28

**Model Splits or Lumps**
This biophysical setting (BpS) is lumped with 1016.

**Geographic Range**
This BpS occurs on the Colorado Plateau from the western slope of the Colorado Rocky Mountains to the Wasatch Range, south to the Mogollon Rim. This type is usually the lowest elevation tree-dominated type in the area, and it is found on lower mountain slopes, mesas, and adjacent plains.

**Biophysical Site Description**
These woodlands occur on warm, dry sites on mountain slopes; mesas; plateaus; and ridges. This type is found on many sites, ranging from deep, well drained soils on nearly flat slopes to shallow, steep, and rocky sites. Typically lower elevations: 1,500-2,400m (4,950-7,950ft).

**Vegetation Description**
This type is dominated by JUOS, with lesser amounts of PIED, and JUSC2. Understory layers are variable. The most common shrub associates are ARTR2, QUGA, and CEMO2. It has a sparse to absent understory of grasses, sub-shrubs, and forbs.

**BpS Dominant and Indicator Species**

| Symbol | Scientific Name | Common Name |
|---|---|---|
| JUOS | *Juniperus osteosperma* | Utah juniper |
| PIED | *Pinus edulis* | Twoneedle pinyon |
| PIPO | *Pinus ponderosa* | Ponderosa pine |
| JUSC2 | *Juniperus scopulorum* | Rocky mountain juniper |
| ARTR2 | *Artemisia tridentata* | Big sagebrush |

Species names are from the NRCS PLANTS database. Check species codes at http://plants.usda.gov.

**Disturbance Description**
The fire regime is characterized by somewhat frequent mosaic fire with very infrequent replacement fire (Rondeau 2001). There is frequent fire importation from adjacent types. Some areas have extensive mortality since 2002 due to the drought-induced ips beetle outbreak.

**Fire Frequency**

| Severity | Avg FI | Percent of All Fires | Min FI | Max FI |
|---|---|---|---|---|
| Replacement | 431 | 29 | | |
| Moderate (Mixed) | 193 | 65 | | |
| Low (Surface) | 2121 | 6 | | |
| All Fires | 125 | 100 | | |

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is the central tendency modeled. Percent of all fires is the percent of all fires modeled in that severity class. Minimum and Maximum FIs show the relative range of fire intervals as estimated by model contributors, if known.

### Scale Description

The most common disturbance in this type is very small scale, either single tree or small groups. If the conditions are just right, then it experiences replacement fire that burns stands up to thousands of acres. This type may also have mixed-severity fire of tens of hundreds of acres.

### Adjacency or Identification Concerns

At higher elevations, this type borders ponderosa pine and/or Gambel oak/*Cercocarpus* shrubland. At lower elevations, it abuts sagebrush and desert scrub.

### Issues or Problems

### Native Uncharacteristic Conditions

### Comments

## *Succession Classes*

### Mapping Rules

| Upper Layer Lifeform | Height (m) | Canopy Cover (%) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0-10 | 11-20 | 21-30 | 31-40 | 41 - 50 | 51-60 | 61-70 | 71-80 | 81-90 | 91-100 |
| Herb | 0-0.5 | A | A | A | A | A | A | A | A | A | A |
| Herb | 0.5-1.0 | A | A | A | A | A | A | A | A | A | A |
| Herb | >1.0 | A | A | A | A | A | A | A | A | A | A |
| Shrub | 0-0.5 | A | A | A | A | A | A | A | A | A | A |
| Shrub | 0.5-1.0 | A | A | A | A | A | A | A | A | A | A |
| Shrub | 1.0-3.0 | A | A | A | A | A | A | A | A | A | A |
| Shrub | >3.0 | A | A | A | A | A | A | A | A | A | A |
| Tree | 0-5 | C | C | C | B | B | B | B | B | B | B |
| Tree | 5-10 | D | D | D | D | E | E | E | E | E | E |
| Tree | 10-25 | D | D | D | D | E | E | E | E | E | E |
| Tree | 25-50 | D | D | D | D | E | E | E | E | E | E |
| Tree | >50 | D | D | D | D | E | E | E | E | E | E |

Succession class letters A-E are described in the Succession Class Description section. Some classes use a leafform distinction where a qualifier is added to the class letter: Brdl (broadleaf), Con (conifer), or Mix (mixed conifer and broadleaf). UN refers to uncharacteristic native or a combination of height and cover that would not be expected under the reference condition. NP refers to not possible or a combination of height and cover which is not physiologically possible for the species in the BpS.

**Description**

**Class A 10 Early Development 1 - All Structures**

*Indicator Species*

| Symbol | Scientific Name | Common Name | Canopy Position |
|---|---|---|---|
| JUOS | Juniperus osteosperma | Utah juniper | All |
| PIED | Pinus edulis | Twoneedle pinyon | All |
| JUSC2 | Juniperus scopulorum | Rocky mountain juniper | All |

*Description*
Grass/forb/shrub/seedling, usually post-fire.

*Maximum Tree Size Class*
Seedling <4.5ft

**Class B 21 Mid Development 1 - Closed**

*Indicator Species*

| Symbol | Scientific Name | Common Name | Canopy Position |
|---|---|---|---|
| PIED | Pinus edulis | Twoneedle pinyon | Upper |
| JUOS | Juniperus osteosperma | Utah juniper | Upper |
| JUSC2 | Juniperus scopulorum | Rocky mountain juniper | Upper |

*Description*
Mid-development, dense pinyon-juniper woodland; understory being lost.

*Maximum Tree Size Class*
Pole 5-9" DBH

**Class C 24 Mid Development 1 - Open**

*Indicator Species*

| Symbol | Scientific Name | Common Name | Canopy Position |
|---|---|---|---|
| PIED | Pinus edulis | Twoneedle pinyon | Upper |
| JUSC2 | Juniperus scopulorum | Rocky mountain juniper | Upper |
| JUOS | Juniperus osteosperma | Utah juniper | Upper |

*Description*
Mid-development, open pinyon-juniper stand with mixed shrub/herbaceous community in understory.

*Maximum Tree Size Class*
Pole 5-9" DBH

**Class D 35 Late Development 1 - Open**

*Indicator Species*

| Symbol | Scientific Name | Common Name | Canopy Position |
|---|---|---|---|
| PIED | Pinus edulis | Twoneedle pinyon | Upper |
| JUSC2 | Juniperus scopulorum | Rocky mountain juniper | Upper |
| JUOS | Juniperus osteosperma | Utah juniper | Upper |

*Description*
Late-development, open juniper-pinyon stand with "savannah-like" appearance; mixed grass/shrub/herbaceous community.

*Maximum Tree Size Class*
Medium 9-21" DBH

**Class E 10 Late Development 1 - Closed**

*Indicator Species*

| Symbol | Scientific Name | Common Name | Canopy Position |
|---|---|---|---|
| PIED | Pinus edulis | Twoneedle pinyon | Upper |
| JUSC2 | Juniperus scopulorum | Rocky mountain juniper | Upper |
| JUOS | Juniperus osteosperma | Utah juniper | Upper |

*Description*
Dense, old-growth stands with multiple layers. Late-development, closed pinyon-juniper forest. May have all-age, multi-story structure. Moderate mortality within stand. Occasional shrubs with few grasses and forbs, and often much rock.

*Maximum Tree Size Class*
Medium 9-21" DBH

## *Model Parameters*

**Deterministic Transitions**

| From Class | Begins at (yr) | Succeeds to | After (years) |
|---|---|---|---|
| Early1:ALL | 0 | Mid1:OPN | 59 |
| Mid1:OPN | 60 | Late1:OPN | 159 |
| Mid1:CLS | 60 | Late1:CLS | 179 |
| Late1:OPN | 160 | Late1:OPN | 999 |
| Late1:CLS | 180 | Late1:CLS | 999 |

**Probabilistic Transitions**

| Disturbance Type | Disturbance occurs In | Moves vegetation to | Disturbance Probability | Return Interval (yrs) | Reset Age to New Class Start Age After Disturbance? | Years Since Last Disturbance |
|---|---|---|---|---|---|---|
| Surface Fire | Early1:ALL | Early1:ALL | 0.005 | 200 | No | 0 |
| Replacement Fire | Early1:ALL | Early1:ALL | 0.005 | 200 | Yes | 0 |
| Alternative Succession | Early1:ALL | Mid1:CLS | 0.01 | 100 | Yes | 0 |
| Insects or Disease | Mid1:OPN | Mid1:OPN | 0.001 | 1000 | No | 0 |
| Replacement Fire | Mid1:OPN | Early1:ALL | 0.002 | 500 | Yes | 0 |
| Mixed Fire | Mid1:OPN | Mid1:OPN | 0.005 | 200 | No | 0 |
| Alternative Succession | Mid1:OPN | Mid1:CLS | 0.02 | 50 | Yes | 0 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.0023 | 435 | Yes | 0 |
| Wind or Weather or Stress | Mid1:CLS | Mid1:OPN | 0.007 | 143 | Yes | 0 |
| Mixed Fire | Mid1:CLS | Mid1:OPN | 0.007 | 143 | Yes | 0 |
| Insects or Disease | Mid1:CLS | Mid1:OPN | 0.01 | 100 | Yes | 0 |
| Replacement Fire | Late1:OPN | Early1:ALL | 0.002 | 500 | Yes | 0 |
| Mixed Fire | Late1:OPN | Late1:OPN | 0.005 | 200 | No | 0 |
| Alternative Succession | Late1:OPN | Late1:CLS | 0.005 | 200 | Yes | 0 |
| Insects or Disease | Late1:OPN | Late1:OPN | 0.007 | 143 | No | 0 |
| Competition or Maintenance | Late1:OPN | Late1:OPN | 0.01 | 100 | No | 0 |
| Replacement Fire | Late1:CLS | Early1:ALL | 0.002 | 500 | Yes | 0 |
| Mixed Fire | Late1:CLS | Late1:OPN | 0.007 | 143 | Yes | 0 |
| Insects or Disease | Late1:CLS | Late1:OPN | 0.01 | 100 | Yes | 0 |

## *References*


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