11150

Inter-Mountain Basins Juniper Savanna

BpS Model/Description Version: Aug. 2020

Vegetation Type

Steppe/Savanna

Map Zones

14

Geographic Range

In CA, NV, western AZ and UT.

Biophysical Site Description

This ecological system is typically found at lower elevations ranging from 1,500-2,300m. Occurrences are found on lower mountain slopes, hills, plateaus, basins and flats. Juniper savanna ecotype generally occurs in local, geologically confined, badland environments with little soil development and is limited in its distribution. Occurs at the lower altitudinal limits for tree species, below the pinyon-juniper woodland type but at or above sagebrush semi-desert and salt desert shrubland in locations where soil moisture is limiting.

Vegetation Description

The vegetation is typically open savanna, although there may be inclusions of more dense juniper woodlands. This savanna is typically dominated by *Juniperus osteosperma* trees with sparse cover of black sagebrush and perennial bunch grasses and forbs, with *Elymus elymoides*, *Achnatherum hymenoides* (=*Oryzopsis hymenoides*), *Hesperostipa comate*, and *Pleuraphis jamesii* being most common. Pinyon trees are typically not present because sites are outside the ecological or geographic range of *Pinus edulis* and *Pinus monophylla*.

BpS Dominant and Indicator Species

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

Disturbance Description

Uncertainty exists about the fire frequencies of this ecological system. It is likely that fires were very infrequent in this ecotype with inherently low productivity. Fire occurrence was primarily determined by fire occurrence in the surrounding matrix vegetation. Lightning-ignited fires typically did not affect more than a few individual trees. Replacement fires were rare and occurred primarily during extreme fire behavior conditions, particularly when preceded by wetter years associated with high herbaceous production. Fire regime primarily determined by adjacent communities, as fire rarely originated within the community. Mixed severity fire was characterized as a mosaic of replacement and surface fires distributed through the patch at a fine scale (<0.1ac). Surface fire could occur in stands where understory grass cover was high and provided adequate fuel. Surface fire was primarily responsible for producing fire scars on juniper trees in older stands.

Fire Frequency

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

Juniper savanna was usually distributed across the landscape in patches that range from 10s-100s of acres in size. In areas with very broken topography and/or mesa landforms this type may have occurred in patches of several hundred acres. Patches are often linear and follow the edge of drainages.

Adjacency or Identification Concerns

This system is generally found at lower elevations and more xeric sites than Great Basin Pinyon-Juniper Woodland (BpS 1019) or Colorado Plateau Pinyon-Juniper Woodland (BpS 1016).

In modern days, surrounding matrix vegetation has changed to young mid-aged woodlands that encroached the former sagebrush matrix during the last century of fire exclusion or livestock grazing. True woodlands sites have experienced densification as historic grazing reduced the competition grasses imposed on tree and shrub seedlings. The woodlands burn more intensely than the former sagebrush matrix. Many lay-people confuse these younger pinyon and juniper woodlands with true woodland sites dependent on naturally fire-protected features.

Issues or Problems

Uncertainty exists about the fire frequencies of this ecological system because juniper does not generally survive fire and most fire studies on pinyon and/or juniper are from other regions with fire scars recorded on conifers that experience more frequent fire.

Native Uncharacteristic Conditions

Tree and shrub cover >40% is uncharacteristic with tree cover >30% being rare.

Comments

Succession Classes

**Mapping Rules**

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 2 Early Development 1 - Open

Indicator Species

Description

Initial post-fire community dominated by annual forbs. Later stages of this class contain greater amounts of perennial grasses and forbs. Evidence of past fires, charcoal and other evidence can be observed.

*Maximum Tree Size Class*  
None

Class B 2 Mid Development 1 - Open

Upper Layer Canopy Cover: 0 - 30%

Upper Layer Canopy Height: Shrub 0m - Shrub 0.5m

Indicator Species

Description

Dominated by perennial forbs and grasses, with early shrub establishment. Total cover remains low due to shallow unproductive soil.

*Maximum Tree Size Class*  
None

Class C 6 Mid Development 2 - Open

Indicator Species

Description

Shrub dominated community with young juniper seedlings, 5-20% cover and less than five meters tall, becoming established.

*Maximum Tree Size Class*  
Seedling <4.5ft

Class D 23 Late Development 1 - Open

Indicator Species

Description

Community dominated by young to mature juniper of mixed age structure. Juniper becoming competitive on site and beginning to affect understory composition.

*Maximum Tree Size Class*  
Large 21-33" DBH

Class E 67 Late Development 2 - Open

Indicator Species

Description

Site dominated by widely spaced old juniper. Grasses (e.g. *Hesperostipa comata*) present on microsites with deeper soils (>20in) with restricting clay subsurface horizon. Shrubs are present.

*Maximum Tree Size Class*  
Very Large >33" DBH

Model Parameters

Deterministic Transitions

Probabilistic Transitions

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