

4. *Pinus edulis* - (*Juniperus monosperma*, *Juniperus deppeana*) / *Bouteloua gracilis* Open Woodland Association

Two-needle pinyon - (Oneseed juniper, Alligator juniper) / Blue grama Open Woodland Association

This association is characterized by a moderately dense tree canopy (15–47%) co-dominated by two-needle pinyon (*Pinus edulis*) and oneseed juniper (*Juniperus monosperma*), with one common associate, gray oak (*Quercus grisea*), and an herbaceous stratum (<0.5) dominated by blue grama (*Bouteloua gracilis*). The dominant canopy trees, two-needle pinyon (*P. edulis*) and oneseed juniper (*J. monosperma*), both provide an average of 11% cover throughout the community, with values ranging above 30%. Tree heights vary, with two-needle pinyon (*P. edulis*) ranging from 6 to 12 meters tall and averaging to 8 meters. Oneseed juniper (*J. monosperma*) is shorter, averaging 5 meters tall and rarely over 6 meters. Gray oak (*Q. grisea*) is a common associate, providing an average of 7% cover and growing as a tree up to 6 meters tall (averaging 4 m) and occasionally as a shrub with heights less than 2 meters. Other trees, such as ponderosa pine (*Pinus ponderosa*), alligator juniper (*Juniperus deppeana*), and Rocky Mountain juniper (*Juniperus scopulorum*), are occasional, rarely covering more than 1 or 2%. Blue grama (*B. gracilis*) provides variable cover in the field stratum, with values ranging up to 18%, but averaging to only 5%. On occasion, sideoats grama (*Bouteloua curtipendula*) can appear co-dominant or even provide more cover than blue grama (*B. gracilis*), but not consistently across the landscape. The shrub layer is normally not well developed, with individuals scattered or growing beneath taller trees, and rarely providing much more than 3% cover. However, on the steeper, rockier, exposed hill crests, alderleaf mountain mahogany (*C. montanus*) can provide a few percent cover (up to 10%).

This association spans large areas, often covering and wrapping around entire hilltops. Elevation ranges from approximately 1,700 to 1,920 meters (5,600–6,300 ft). Typically, these communities are found on predominantly west-, southwest-, and southeast-facing slopes, covering 33.66% (352.31 ha/870.59 ac) of the project area and 28.40% (60.56 ha/150.00 ac) of the monument.

Common species

- *Pinus edulis*
- *Juniperus monosperma*
- *Quercus grisea*
- *Cercocarpus montanus*
- *Bouteloua gracilis*

