

Ecological site R028BY043NV CALCAREOUS MAHOGANY SAVANNA

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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.

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Approved by	PNovak-Echenique
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- Number and extent of rills:** Rills are rare to few. Occurrence of rills may be more frequent as canopy cover increases and on steeper slopes after summer convection storms or rapid snowmelt.
- Presence of water flow patterns:** Water flow patterns are rare to few with occurrence increasing as canopy cover increases. Flow patterns are typically short (< 2m), meandering and interrupted by plant bases and rock fragments.
- Number and height of erosional pedestals or terracettes:** Pedestals are none to rare. Occurrence is usually limited to areas of water flow patterns.
- Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground \pm 5-10%, depending on amount of surface rock fragments.
- Number of gullies and erosion associated with gullies:** None
- Extent of wind scoured, blowouts and/or depositional areas:** None - the soil surface is protected by rock fragments.

7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter (foliage from grasses and annual & perennial forbs) expected to move distance of slope length during intense summer convection storms or rapid snowmelt events. Persistent litter (large woody material) will remain in place except during large rainfall events. Mat of accumulating leaf or needle litter under mature trees is very stable and shows no obvious movement.
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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil stability values should be 3 to 6 on most soil textures found on this site.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface structure is thick platy, subangular blocky, or very fine granular. Soil surface colors are grayish browns and soils are typified by a mollic epipedon. Surface textures are loams. Organic carbon of the surface 2 to 4 inches is typically 3 to 5 percent, dropping off quickly below. Organic matter content can be more or less depending on micro-topography.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Perennial herbaceous plants (especially deep-rooted bunchgrasses [i.e., needlegrasses] slow runoff and increase infiltration. Curlleaf mountain mahogany and understory shrubs break raindrop impact and provide opportunity for snow catch and accumulation on site.
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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** Compacted layers are none. Subangular blocky or massive sub-surface horizons or subsoil argillic horizons are not to be interpreted as compacted layers.
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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: Reference State: Curlleaf mountain mahogany
- Sub-dominant: Deep-rooted, cool season, perennial bunchgrasses > understory shrubs > deep-rooted, cool season, perennial grasses > shallow-rooted, cool season, perennial forbs = fibrous, shallow-rooted, cool season, perennial forbs = annual forbs
- Other: evergreen trees
- Additional: With an extended fire return interval, the shrub and tree component will increase at the expense of the herbaceous component. The evergreen trees may eventually dominate this site and the understory will be greatly reduced.
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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Overstory trees have little mortality. Dead branches within understory shrubs are common and standing dead shrub canopy material may be as much as 35% of total shrub canopy; mature bunchgrasses (<25%) may have dead centers.
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14. **Average percent litter cover (%) and depth (in):** Herbaceous, or non-persistent, litter within curlleaf

mountainmahogany canopy interspaces (~20-30%) and litter depth is $\pm \frac{1}{2}$ inch. Leaf litter forms a mat 1 to 2 inches thick under the drip line of mature mountainmahogany. Large, persistent, litter from trees (limbs, etc.) variable to 5%.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Total for all trees, shrubs and herbaceous plants, irrespective of plant height for normal or average growing season (through May) = ± 3500 lbs/ac. For understory vegetation to 4½ feet and normal or average growing season (through May) = ± 800 lbs/ac.

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: Potential invaders include cheatgrass. Singleleaf pinyon and Utah juniper may increase on this site and eventually dominate.

17. **Perennial plant reproductive capability:** All functional groups should reproduce in average (or normal) and above average growing season years. Reduced growth and reproduction occur during extreme or extended drought conditions.
