USDA Natural Resources
Conservation Service

Ecological site R038XB101NM
Shallow

Accessed: 05/14/2025

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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Date	06/14/2012
Approved by	John E. Tunberg
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills should be very uncommon due to high amounts of rock fragment armor on the surface and in the profile. In steeper areas without the usual rock armor, there may be a few rills due to moderate permeability, rapid runoff, and shallow depth of soils.

2. **Presence of water flow patterns:** Water flow patterns may be common due to moderate permeability, rapid runoff and shallow depth of soils.

3. **Number and height of erosional pedestals or terracettes:** A few pedestals and terracettes may occur, but they should be very short.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground averages 50-60%. Areas with a higher cover of rock fragments or bedrock have less bare ground. Drought may cause an increase in bare ground. This site has an average available water capacity of only 1 inch, so the potential to produce plant cover is very low.

5. **Number of gullies and erosion associated with gullies:** None

6. **Extent of wind scoured, blowouts and/or depositional areas:** None

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7. **Amount of litter movement (describe size and distance expected to travel):** Herbaceous and fine woody litter will be transported in water flow pathways. Coarse woody litter will remain under shrub and tree canopies.

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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 aggregate stability ratings average six under plant canopy and three in interspaces. Soil surface texture is mostly loam, with a few areas of sandy loam. Surface horizon is usually gravelly to extremely gravelly. There may be 60-75% cover of rock fragments on the surface. When well vegetated and/or protected by rock armor, soils have a high resistance to water erosion and a moderate to high resistance to wind erosion.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface structure is platy (weak medium) or granular (weak fine). Surface thickness is mostly 1-2 inches. Color is variable depending upon parent material.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The site is characterized by a relatively uniform distribution of mostly grasses with some shrubs and a few forbs. Some locations have an open scattered tree canopy. Canopy cover averages 35% (30% grasses, 1% forbs, 4% shrubs, 1% trees). Basal plant cover averages 7%

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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):** Soils are not generally at risk for compaction due to the high content of gravel and cobbles in the profile. In areas without much rock armor, most soils will be easily compacted. About half the soils have a naturally platy surface structure.

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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: warm season bunchgrasses >

    Sub-dominant: cool season bunchgrasses = shrubs = warm season colonizing grasses >

    Other: Minor: Forbs >

    Additional: Trace: trees = cacti = Agave family

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** All plant functional groups are adapted to survival except in the most severe droughts. Severe winter droughts affect shrubs and trees the most. Severe summer droughts affect grasses the most.

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14. **Average percent litter cover (%) and depth (in):** Mostly herbaceous litter with some woody litter. Litter amounts increase during the first few years of drought, then decrease in later years.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 250-400 pounds per acre (dry weight) in drought years, 400-550 pounds per acre in median years, 550-700 pounds per acre in wet years.

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:** Broom snakeweed and ring muhly are native to the site, but they have the potential to increase and dominate the area after heavy grazing. Cheatgrass is an exotic plant that can invade and dominate the site regardless of management.

17. **Perennial plant reproductive capability:** All plants native to the site are adapted to the climate and are capable of producing seeds, stolons and rhizomes except during the most severe drought.