

Ecological site R048AA250CO Subalpine Loam Gunnison Basin LRU

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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.

Author(s)/participant(s)	Participants were John Murray and Lars Santana - written originally on 12-13-2004. Updated 7/27/2015 by Suzanne Mayne-Kinney
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Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None on slopes less than 15%. A few rills can be more defined on slopes greater than 15%. After intense storms, after wildfires, extended droughts or a combination of these disturbances rill will increase in number.

2. **Presence of water flow patterns:** None. On slopes greater than 15%, water pattern may be few, but those present flow patterns are short and not connected. Flow patterns should only be present following an intense weather event. Flow length and numbers will increase after wildfires, and/or extended drought.

3. **Number and height of erosional pedestals or terracettes:** Pedestals and/or terracettes do not occur on this site at the reference community phase. When runoff is increased from intense storms, it may expect to find some pedestalling and terracettes. On steeper slopes, with intense storms, there will be pedestalling and terracettes that form.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Expect 2-10% bare ground. Extended drought can cause bare ground to increase.

5. **Number of gullies and erosion associated with gullies:** Very rare and when drainages are present they are stabilized with native vegetation and should show no active signs of erosion.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** Wind erosion is minimal to non-existent. Significant wind erosion would only be present following wildfire, and/or extended drought. Wind scour, blowouts and/or depositional areas should be rare and only associated with disturbances (examples: bedding areas and small mammal burrows).
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7. **Amount of litter movement (describe size and distance expected to travel):** None to Slight; litter should be evenly disturbed across the site a thicker layer under the shrub canopy. Litter movement consists primarily of redistribution of fine litter (herbaceous plant material) associated with flow paths. Movement is expected to be short and minimal. Litter movement will be greater after wildfires, extended drought and other disturbances. High intensity thunderstorms may increase the amount and size of materials moved.
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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):** Stability class rating at 3 to 4 in unprotected areas in the interspaces. Under plant shrub or grass plant canopy values will be 5 to 6.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Average SOM is 2-6%. Surface soils layer (A-horizon) is typically dark brown loam, usually greater than 16" in depth and typically granular structure. Soil surface is stable and evidence of movement is minimal. Soils are typically deep and well drained.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Diverse grass, forb, shrub canopy, and root structure reduces raindrop impact and slows overland flow providing increased time for infiltration to occur. Infiltration is high and runoff is low with extensive plant ground cover and fibrous root systems. Extended spring drought reduces cool season bunchgrasses causing decreased infiltration and increased runoff following intense storms.
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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):** No compaction layer should be present. Care should be taken as to not misinterpret clay layers in the soil for compaction.
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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: Dominant Native Perennial Cool Bunchgrasses Dominant Native Perennial Forbs Occasional Native Perennial Forbs
- Sub-dominant: Dominant Non-Sprouting Shrubs = Occasional Native Perennial Cool Bunchgrasses Subdominant Native Perennial Cool Rhizomatous = Dominant Sprouting Shrubs
- Other: Occasional Native Perennial Warm Bunchgrasses
- Additional:
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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Typically minimal, however lack of disturbance results in standing residual buildup and increased decadence. Expect slight shrub and grass mortality/decadence during and following drought. Extended drought would tend to cause relatively high mortality in short lived species. Shrub mortality would be limited to severe droughts. Sagebrush species are most affected by lack of snow during the winter.
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14. **Average percent litter cover (%) and depth (in):** 50-70% litter cover and ranges from 1.0 to 2.0 inches in depth. Litter cover declines during and following extended drought. After wildfires, and/or extended droughts, litter cover and depth decreases to none immediately after the disturbance and dependent on climate and plant production increase to post-disturbance levels in 1 to 5 growing seasons.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 2000 lbs. /ac. low precipitation years; 2500 lbs. /ac. average precipitation years; 3000 lbs./ac. above average precipitation years. After extended drought or the first growing season following wildfire, production may be significantly reduced by 600 – 800 lbs. /ac. or more.
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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:** Kentucky bluegrass, Canada thistle
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17. **Perennial plant reproductive capability:** All plant species should be capable of reproduction depending on availability of water. All plants should be vigorous, and healthy. Plant should produce seed heads and, vegetative tillers, etc. The only limitations are weather-related, wildfire, natural disease, inter-species competition, wildlife, and insects that may temporarily reduce reproductive capability.
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