USDA Natural Resources
Conservation Service

Ecological site R067BY031CO
Sandy Bottomland

Last updated: 12/05/2024
Accessed: 05/12/2025

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	01/11/2005
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None

2. **Presence of water flow patterns:** Typically none. Water patterns, if present, are broken, irregular in appearance or discontinuous with numerous debris dams or vegetative barriers.

3. **Number and height of erosional pedestals or terracettes:** Pedestalled plants caused by wind erosion would be minor.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 3 percent or less bare ground, with bare patches ranging from 3 to 5 inches in diameter. Prolonged drought or wildfire events will cause bare ground to increase upwards to 5 to10 percent with bare patches ranging from 8 to 2 inches in diameter.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** Very minor wind scouring may occur. Wind erosion can occur with disturbances such as fire or extended drought.

7. **Amount of litter movement (describe size and distance expected to travel):** Litter should be uniformly distributed with little movement. On steep slopes or knolls, litter may move from a few inches to 1 to 2 feet depending on intensity of wind or rainfall event.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Stability class rating is anticipated to be 4 to 5 in the interspaces at soil surface. Soil surface is stabilized by decomposing organic matter. Biological crusts (lichens, algae, cyanobacteria, mosses) may be present on or just below soil surface.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Average SOM ranges from 1to 2 percent. Soils are very deep, light brownish gray, weak very fine granular structure.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Raindrop impact is reduced by the diverse grass, forb, shrub functional/structural groups and root structure. This slows overland flow and provides increased time for infiltration to occur. Extended drought, wildfire or both may reduce basal density, canopy cover, and litter amounts (primarily from tall, warm-season bunch and rhizomatous grasses), resulting in decreased infiltration and increased runoff on steep slopes following intense rainfall events.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None

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 tall bunchgrass >>

    Sub-dominant: Warm-season tall rhizomatous grass > shrubs > cool-season mid bunchgrass > warm-season mid bunchgrass > leguminous forbs >

    Other: Warm-season short bunchgrass = warm-season forbs > cool-season forbs

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Minimal

14. **Average percent litter cover (%) and depth (in):** Litter cover during and following drought ranges from 20 to 30 percent and 5 to15 percent following wildfire.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 1200 lbs./ac. low precipitation years; 1850 lbs./ac. average years; 2400 lbs./ac. high years. After extended drought or the first growing season following wildfire, production may be significantly reduced by 400 to 750 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:** Invasive plants should not occur in reference plant community. Following fire events or extended drought, cheatgrass, Russian thistle, burningbush, Rocky Mountain beeplant may invade assuming a seed source is available.

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17. **Perennial plant reproductive capability:** The only limitations are weather-related, wildfire, natural disease, and insects that may temporarily reduce reproductive capability.
