USDA Natural Resources
Conservation Service

Ecological site R051XA006NM
Breaks

Last updated: 9/07/2023
Accessed: 05/01/2024

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)	Scott Woodall
Contact for lead author	
Date	06/29/2012
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Because this site is armored with a gravel mulch there is no sign of rills.

2. **Presence of water flow patterns:** None to very rare. They may be present of steeper slopes following intense rain events. Flow pats are short and disconnected and are broken by basalt surface rock.

3. **Number and height of erosional pedestals or terracettes:** Terracettes may be present after intense storm events. They will be associated with water flow patterns on steeper slopes. Pedestals will be very minor, around bunch grasses on steeper slopes.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** There is very little bare ground on this site, less than five percent. Plants and extensive rock and gravel mulch cover and protect the soil.

5. **Number of gullies and erosion associated with gullies:** This is not a site that forms gullies. Plant cover and armoring from rocks and gravel keep the soil in place.

6. **Extent of wind scoured, blowouts and/or depositional areas:** There should be no wind erosion occurring on this site.

The soil is heavily covered and protected from the wind. Occasionally wind blown deposits from other areas can collect under shrubs.

---

7. **Amount of litter movement (describe size and distance expected to travel):** Some movement if litter is expected due to the steepness of the slope. Distance of travel varies from 1-2 feet following intense rainfall events. Litter will be caught by surface rock.

---

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** This site should have a soil stability rating of 4-5 in the interspaces and 5-6 underneath plants.

---

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface soils are gravelly or cobbly loam. The A-horizon ranges from 0-10 inches in depth and color ranges from brown to dark brown. Surface structure is moderate medium granular structure. Rock fragments can makeup 35-55% of the volume. Soil organic matter is around 1%.

---

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The distribution and composition of grass, shrub, tree, forb canopy plus associated diverse root structures reduces raindrop impact and slows overland flow providing increased time for infiltration to occur. Also, the abundance of rock on the surface, slows runoff velocity and increases infiltration.

---

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** There is no presence of a compaction layer on this site.

---

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: Cool season bunchgrasses (indian ricegrass, bottlebrush squirreltail, scribners needlegrass, needleandthread>

    Sub-dominant: Sub-dominant: shrubs (Greene's rabbitbrush, big sagebrush, fourwing saltbush, winterfat, rubber rabbitbrush) > warm season bunchgrasses (blue grama, sand dropseed, spike dropseed, threeawn, galleta, little bluestem) > warm season stoloniferous grasses (black grama) > cool season rhizomatous grasses (western wheat) = forbs: (asters, Colorado four o'clock, scarlet globemallow, finged sagewort, buckwheats) >

    Other: Others: trees (pinon, juniper)

    Additional:

---

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** During years with average to above-average precipitation, there should be very little recent mortality or decadence apparent in either the grasses or shrubs. Some mortality of cool season bunchgrasses may occur during severe winter droughts.

---

14. **Average percent litter cover (%) and depth (in):** Litter cover can be fairly minimal on this site (5-15%). Nearly all litter will be leaves and small stems and most will be accumulated around shrubs and rock. Litter redistribution following natural extreme runoff events can reduce litter cover by concentrating it in low lying areas.

---

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Long term average of 670 pounds per acre; 480 pounds during unfavorable conditions, 860 pounds during above average precipitation years. After extended drought or the first growing season following wildfire, production may be reduced to 100 pounds.

---

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:** Prickly pear cactus can increase as this site moves to a degraded state.

---

17. **Perennial plant reproductive capability:** During years with average or above average growing conditions, all perennial plants should have the ability in most years to reproduce seed, tillers, or sprouts. During extended periods of drought, reproductive capability may be severely restricted.
