Ecological site R053AE060MT
Loamy (Lo) (Legacy) RRU 53AE

Last updated: 6/14/2023
Accessed: 10/12/2024

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)	Dr. John Lacey, Maxine Rasmussen, Jon Siddoway & Rick Bandy
Contact for lead author	
Date	03/30/2005
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills should not be present in HCPC. If in plant community A, careful examination will yield slight evidence of rills that are less than ½ inch deep, linear, but short in length. If in plant community B, rills would be visible, ½ inch deep or more, linear, rarely exceeding 1 foot in length. Distance between rills is irregular. If in plant community B, rills would be visible.

---

2. **Presence of water flow patterns:** Water flow patterns should not be observable in HCPC. If in plant community A, careful
examination will yield short discontinuous water flow patterns. If in plant community B, water flow patterns would be visible as long (more than 1feet) and continuous across the landscape.

---

3. **Number and height of erosional pedestals or terracettes:** Pedestals or terracettes would essentially be nonexistent in HCPC. If in plant community A, careful examination on slopes > 8% yield occasional pedestals and terracettes approximately ¼ inch above the soil surface. If in plant community B on slopes > 8%, pedestals and terracettes are frequent and ½ - ¾ inch above the soil surface.

---

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Less than 5% of the soil surface should be bare in HCPC. Bare ground should be less than 2” in diameter. If in plant community A, 5-10% of the soil surface can be exposed. If in plant community B, 25% of the soil surface can be exposed.

5. **Number of gullies and erosion associated with gullies:** Gullies are not associated with any of the State 1 reference plant communities.

6. **Extent of wind scoured, blowouts and/or depositional areas:** Wind scoured, blowouts and/or depositional areas are not associated with any of the State 1 reference plant communities.

7. **Amount of litter movement (describe size and distance expected to travel):** Litter movement is not expected with HCPC or plant community A. If in plant community B, litter, both fine and coarse, movement is visible, especially on slopes > 8%, but the distance moved is less than 1 foot.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Stability class anticipated to be 5 or 6 under plant canopy.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The surface layer is 0-7" deep. The color ranges from brown, grayish brown to dark grayish brown. Surface textures include loam, silt loam gravelly loam, clay loam, silty clay loam or sandy clay loam. Soil organic matter ranges from 2-4% with a high of 5% and a low of 1%.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** In HCPC, 90-95% plant canopy and 80-85% basal cover with small gaps between plants
should reduce raindrop impact and slow overland flow, providing increased time for infiltration to occur. Healthy, deep rooted native grasses enhance infiltration and reduce runoff. Infiltration rate is slow. If in plant community A, 90-95% plant canopy and 70-80% basal cover with small gaps between plants will still reduce raindrop impact and decrease overland flow. If in plant community B, 40-70% plant canopy and 50-75% basal cover with moderate gaps between plants, intensifies raindrop impact and increases overland flow. The site tends to be more xeric as runoff increases.

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 or soil surface crusting should be evident in any of the State 1 plant communities.

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: Tall and mid-stature, cool season bunch grasses > mid-stature, cool season rhizomatous grasses> short stature, warm season rhizomatous grasses> forbs >shrubs. Plant community A: Mid-stature and tall, cool season bunch grasses > mid-stature, cool season rhizomatous grasses> short stature, warm
    season rhizomatous > forbs = shrubs.

    Sub-dominant: Plant community B: Mid-stature cools season bunch grasses > mid-stature, cool season rhizomatous grasses > short stature, warm season rhizomatous grasses > shrubs > forbs.

Other:

Additional:

---

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Plant mortality and decadence very low in HCPC and Plant community A. In periods of drought, shrubs would exhibit decadence in the state 1 reference communities.

---

14. **Average percent litter cover (%) and depth (in):** Litter cover is in contact with soil surface. Litter decreases in Plant community A to 40-50% and depth is reduced to 0.5 inch. Litter decreases to about 15% in Plant community B and is less than ½ inch deep.

---

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 800 - 2000 #/acre from Plant community B to HCPC in the State 1 reference community.

---

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:** Needle and thread, blue grama, threadleaf sedge, fringed sagewort, plains prickly pear, silver sagebrush, broom snakeweed, leafy spurge, dense clubmoss.

---

17. **Perennial plant reproductive capability:** All species are capable of reproducing in HCPC and Plant community A. In Plant community B, plant seedlings will be weighed in favor of marginal and undesirable species. Replacement of desirable species will be very few.