USDA Natural Resources
Conservation Service

Ecological site R030XB074NV
COBBLY LOAM 5-7 P.Z.

Last updated: 2/26/2025
Accessed: 05/11/2025

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.

Author(s)/participant(s)	E.V. Hourihan
Contact for lead author	State Rangeland Management Specialist
Date	10/06/2011
Approved by	Sarah Quistberg
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills are none to rare and may be evident on steep slopes in areas recently subject to intense summer rainfall.

2. **Presence of water flow patterns:** Waterflow patterns none to rare and may be evident in areas recently subject to intense summer rainfall.

3. **Number and height of erosional pedestals or terracettes:** Pedestals are none to rare with occurrence typically limitec to areas within waterflow patterns.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground up to 45%

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

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

7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter (foliage from grasses and annual & perennial forbs) expected to move distance of slope length (<10 ft) during intense summer convection storms or rapid snowmelt events. Persistent litter (large woody material) will remain in place except during large rainfall events.

---

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil stability values should be 1 to 4 in the interspaces and 3 to 6 under shrub canopy. (To be field tested.)

---

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface structure is typically strong medium to very thick platy. Soil surface colors are light yellowish brown or pale brown and soils are typified by an ochric epipedon, and a calcic and petrocalcic horizon. Organic matter is less than 1%.

---

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Sparse shrub canopy and associated litter break raindrop impact. Perennial herbaceous plants slow runoff and increase infiltration.

---

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None. Subsoil duripans or petrocalcic horizons are not to be interpreted as compacted layers.

---

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: deciduous shrubs > evergreen shrubs

    Sub-dominant: deep-rooted, warm-season, perennial bunchgrasses > perennial forbs > deep-rooted, cool-season, perennial bunchgrasses > annual forbs > shallow-rooted grasses

    Other: succulents, annual grasses

    Additional:

---

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Dead branches within individual shrubs common and standing dead shrub canopy material may be as much as 35% of total woody canopy; mature bunchgrasses commonly (±25%) have dead centers.

---

14. **Average percent litter cover (%) and depth (in):** Under shrubs and between plant interspaces 10-15% and depth (±¼-inch)

---

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** For normal or average growing season ±250lbs/ac. Favorable years400 lbs/ac and unfavorable years 150 lbs/ac

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:** Potential invaders on this site include red brome, filaree, annual mustards, and Mediterranean grass.

17. **Perennial plant reproductive capability:** All functional groups should reproduce in average and above average growing season years. Little growth or reproduction occurs in drought years.