USDA Natural Resources
Conservation Service

Ecological site DX035X04B321
Sandstone Hills 10-14" p.z.

Accessed: 05/07/2024

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)	Kenneth Gishi
Contact for lead author	State Rangeland Management Specialist, NRCS-Arizona State Office, Phoenix, AZ
Date	09/19/2012
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills may be common on steepest slopes due to high amount of rock outcrop directing runoff onto soils and low potential to support vegetative growth on shallow and very shallow soils.

2. **Presence of water flow patterns:** Water flow patterns may be common on the steepest slopes due to high amount of rock outcrop directing runoff onto the soils and low potential for supporting vegetative growth on the shallow and very shallow soils. These patterns are short and discontinuous across larger soil areas, but may be longer and more continuous where soils lie adjacent to bedrock.

3. **Number and height of erosional pedestals or terracettes:** Pedestals and terracettes may be common due to the slopes and moderate potential for water erosion.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground ranges from 15 to 25 percent.

5. **Number of gullies and erosion associated with gullies:** Few are expected. When site is well vegetated and covered with rock fragments gullies are stablilzed with vegetation, shallow and will only show minor signs of active erosion.

6. **Extent of wind scoured, blowouts and/or depositional areas:** Wind scour and blowouts are not expected on this site. There may be some deposition around large shrubs and trees.

---

7. **Amount of litter movement (describe size and distance expected to travel):** Herbaceous and fine woody litter will be transorted in water flow pathways and by wind. Coarse woody litter will remain under shrub and tree canopies. Litter movement may be greatest in areas of steep slopes or areas adjacent to rock outcrop.

---

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** The expected average soil stability is 2. Surface fragments, litter, and vegetation cover aid in reducing erosion. This site has moderate resistance to wind erosion and low resistance to water erosion.

---

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface structures are waek platy (thin, fine to moderate) parting to medium granular structure. Surface thickness of the A-horizon is 1-3 inches. Color of the A-horizon does not differ significatly from the subsurface soil horizons.

---

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** This site is characterized by a relatively even distribution of perennial grasses with scattered half-shrubs, large shrubs, forbs and scattered trees. The vegetation when well distributed along with rock fragments across the site lends to slowing runoff and allowing for some infiltration. Steep slopes and areas of rock outcrops lends to high runoff on this site.

---

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

---

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: Shrubs (large and low shrubs) >

    Sub-dominant: Trees > cool season grasses > warm season grasses >

    Other: Forbs > cacti & succulents

    Additional:

---

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** All plant functional groups are adapted to survival in all but the most severe droughts. Severe winter droughts affect the shrubs the most. Severe summer droughts affect grasses the most.

---

14. **Average percent litter cover (%) and depth (in):** Litter size and depth on this size will vary greatly beneath tree canopies and the platn interspaces. Litter size will range from 1 leaf thickness to woody litter 3 inches in diameter. Litter will be the highest under tree canopies with a mix of herbaceous, duff and woody litter.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Average annual production on this site is expected to be 400 to 500 lbs/ac. in a year of average annual precipitation.

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:** Juniper, broom snakeweed and rabbitbrush are all native to the site, but may have the potential to increase with continued disturbance. Cheatgrass and Russian thistle are non-native annuals that have the potential to invade the site with or without disturbance.

17. **Perennial plant reproductive capability:** All plants native to the site are adapted to the climate and are capable of producing seeds, stolons, and/or rhizomes during the most severe droughts.