

Ecological site DX035X01I117 Sandy Loam Upland 10-14" p.z.

Last updated: 5/02/2024
Accessed: 05/10/2025

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)	Ken Gishi, Dean Schlichting, Dan Carroll and Max Taylor
Contact for lead author	State Rangeland Management Specialist, NRCS-Arizona State Office, Phoenix, AZ
Date	07/28/2008
Approved by	S. Cassady
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills:** None present on this site. Some minor rills on slopes >5% may form due to moderate permeability and moderate runoff characteristics of the soils.
- 2. Presence of water flow patterns:** Some water flow patterns may occur on soils that have sandy clay loam or clay loam subsurface textures, if these textures are close to the surface. These soils have moderate permeability and moderate runoff. Water flow patterns on these soils are commonly less than 4 feet long, but may be longer on steeper slopes, generally occupying < 10% of the ground cover.
- 3. Number and height of erosional pedestals or terracettes:** Pedestals may be common, but short in height (1/2"). Terracettes are uncommon. Both may be more developed and especially common during drought, due to high wind erosion hazard of the soils. The moderate permeability and moderate runoff conditions could lead to a few pedestals and terracettes being formed by water erosion.
- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground averages 35 – 45% in normal years. Some sites may have biological crusts ranging 0 – 5%. Drought may lead to an increase in bare ground.

5. **Number of gullies and erosion associated with gullies:** None
-
6. **Extent of wind scoured, blowouts and/or depositional areas:** None. High wind erosion hazard occurs on soils with a surface texture of sandy loam.
-
7. **Amount of litter movement (describe size and distance expected to travel):** Most herbaceous and fine woody litter will be transported by wind and in water flow pathways, while a small percentage stays in place. Coarse woody litter and duff will accumulate under shrub and tree canopies.
-
8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil aggregate stability ranges from 4 to 5 under canopy and 2 to 3 in the plant interspaces. A few soils have gravelly surfaces, but most soils do not have any rock fragments. When well vegetated, these soils have a moderate to high resistance to water erosion, but only a low resistance to wind erosion.
-
9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface structure is mostly granular (weak to moderate, fine to medium), but some soil surfaces are platy (weak to moderate, medium to thick). Surface thickness mostly range from 3 - 6 inches, but can range between 2 - 10 inches. Color is variable depending on parent material.
-
10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** This site is dominated by perennial grasses with 20 to 40% cover, then by evergreen shrubs 15 to 20% cover, 1 to 5% cover in forbs, and 1 to 2% cover in trees in some locations. Both canopy and basal cover values of grasses and some shrubs decrease during prolonged drought. Due to soil textures, slope and vegetative composition, this site is moderately effective at capturing and storing precipitation.
-
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 not easily compacted. Many of the soils have a weak granular structure.
-
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 colonizing grasses(20-30%)> shrubs
- Sub-dominant: shrubs (15-20%)> cool season bunchgrasses (5-15%)> warm season bunch grasses (5-10%)
- Other: forbs (1-5%)> trees (< 2%)
- Additional:
-
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** In a normal year up to 10% of grasses and shrubs die off. During and after drought years there can be

from 10 to 20% die off of shrubs and grasses. Severe winter droughts affect shrubs, trees and cool season grasses the most. Severe summer droughts affect the warm season grasses the most.

14. **Average percent litter cover (%) and depth (in):** Average percent litter cover 25-40% and depth 1/8 inches. Within plant interspaces litter ranges from 10 to 20 % cover with depths up to 1/8 inch, while under shrub and tree canopies it ranges from 50 to 75% cover with depths from 1/8 to 1/2 inches thick.
-

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 700 to 800 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:** Broom snakeweed (GUSA2), Rabbitbrush (Chrysothamnus spp.), false buffalograss (MOSQ) and sixweeks fescue (VUOC) are native to the site, but they have the potential to increase and dominate the site after unmanaged grazing. Utah and oneseed juniper (JUOS & JUMO) and Colorado Pinyon (PIED) are native to the site, but have the potential to increase and dominate the site after disturbance and/or fire exclusion. Cheatgrass (BRTE) is an exotic grass that has the potential to invade and dominate the site, with or without disturbance. Lambsquarters (CHAL7) and Russian thistle (SATR12) are annual exotic forbs that have the potential to invade and dominate the site after disturbance, especially if the site is near farm fields or disturbed lands.
-

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