

Ecological site R035XA119AZ Shallow Loamy 10-14" p.z.

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.

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Date	03/23/2006
Approved by	Byron Lambeth
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- Number and extent of rills:** A few rills may occur on steeper slopes due to moderate permeability, rapid runoff and shallow depth of soils. They should be very uncommon in areas that have a lot of rock fragments on the surface and in the soil profile.
- Presence of water flow patterns:** Water flow patterns may be common due to moderate permeability, rapid runoff, and shallow depth of soils. Flow pattern will increase after drought dieback. There will be more water flow patterns on very shallow (<10") soils and in areas adjacent to large expanses of rock outcrop.
- Number and height of erosional pedestals or terracettes:** A few pedestals and terracettes may form, but they should be very short.
- Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground ranges from 20-40%. Sites with a greater cover of rock fragments or bedrock have less bare ground. This site has an average water capacity of only 2 inches, so the potential to produce plant cover is very low, except in areas where plants have access to water in bedrock crops. Drought may cause an increase in bare ground.
- 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):** Herbaceous and fine woody litter will be transported in water flow pathways. Coarse woody litter will remain under shrub and tree canopies. Litter movement may be greater on very shallow soils or in areas adjacent to large expanses of rock outcrop.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil aggregate stability ratings average 5 under plant canopy and 3 in the interspaces. Many areas are protected by blue grama root mats and rock fragments. Soil surface textures range from sandy loam to clay loam. Many soils have a significant amount of rock fragment armor on the surface and in the profile. When well vegetated or covered with rock armor, soils have a high resistance to both water and wind erosion.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface structure is predominantly granular (weak fine, moderately fine and strong fine), but some soils have subangular blocky (weak to moderate, fine to medium) or massive surface structures. Some soils have a platy (weak, medium) surface structure. Surface thickness ranges from 1-12 inches. Surface colors vary 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 characterized by a relatively uniform distribution of mostly grasses with some shrubs and a few forbs. Some locations have an open scattered tree canopy. Canopy cover averages 35% (20% grasses, 3% forbs, 10% shrubs, 2% trees). Basal cover of plants averages 10% (8% grasses, 1% forbs, 1% shrubs, trace moss/lichen). The cover (especially basal cover) is reduced by the amount of rock fragment ground cover. Both cover values (especially canopy cover) decrease during a prolonged drought. This type of plant community 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 due to large amount of rock fragments on the surface and in the profile. In areas without significant rock fragments, however, most soil types may be easily compacted when wet. One soil sometimes has a natural platy surface 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: cool season bunchgrasses

Sub-dominant: warm season bunchgrasses > warm season colonizing grasses > shrubs

Other: Minor: forbs > trees > cacti

Trace: cool season colonizing grasses = annual grasses

Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or**

decadence): All functional groups are adapted for survival except during the most severe droughts. Severe winter droughts affect shrubs and trees the most. Severe summer droughts affect grasses the most. Very shallow (<10") soils will show the most mortality in all functional groups.

14. **Average percent litter cover (%) and depth (in):** Mostly herbaceous litter, but up to 1/3 may be woody. There is generally less litter on rocky sites. Litter amounts increase during the first few years of drought, then decrease in later years.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 250-500 pounds per acre (dry weight) in drought years, 400-650 pounds per acre in median years, 550-800 pounds per acre in wet years.
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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:** Greene rabbitbrush, Douglas rabbitbrush, broom snakeweed, baby aster and Whipple cholla are native to the site, but have the potential to increase and dominate the area after disturbance. Oneseed juniper is native to the site, but has the potential to increase and dominate after unmanaged grazing and/or fire exclusion. Russian thistle is an exotic forb that can invade the site from neighboring farm fields and disturbed lands if the soil is disturbed.
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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 in all but the most severe droughts.
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