

Ecological site R035XY124UT Desert Shallow Clay (Mat Saltbush)

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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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Contact for lead author	shane.green@ut.usda.gov This ecological site occurs on tropic shale in its early stages of soil formation.
Date	09/11/2008
Approved by	Shane A. Green
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- Number and extent of rills:** Very common. Rills present typically run for most of the slope length. They should be 2-3 inches deep.
- Presence of water flow patterns:** Very common throughout the site. They are expected to be long and connected into drainage networks. Evidence of flow will increase with slope. Flow patterns are sometimes difficult to see due to the rough/cracked surface texture.
- Number and height of erosional pedestals or terracettes:** Plants may show some pedestalling (up to .5 inch), a few exposed roots may be apparrent. Terracettes should be rare and stable, occurring in water flow patterns behind rare debris dams.
- Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 45 – 65%. Ground cover is based on the first raindrop impact, and bare ground is the inverse of ground cover. Ground cover + bare ground = 100%. Poorly developed biological soil crusts that are interpreted as functioning as bare ground (therefore they would be susceptible to raindrop splash erosion) should be recorded as bare ground.

5. **Number of gullies and erosion associated with gullies:** Present. May be found where adjacent sites or watersheds provide concentrated flows into the site. Gullies may show signs of active erosion. Gullies may show more indication of erosion as slope steepens, or as the site occurs adjacent to sites where runoff accumulation occurs.
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6. **Extent of wind scoured, blowouts and/or depositional areas:** No evidence of wind generated soil movement. Wind caused blowouts and deposition are not expected to be present.
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7. **Amount of litter movement (describe size and distance expected to travel):** Some down slope redistribution of fine litter caused by water. Herbaceous litter typically becomes lodged in cracks in the soil surface. Some fine litter removal by wind, and some fine litter removal may occur in flow patterns and rills with deposition occurring at points of obstruction, especially following large storm events. Litter movement will increase with slope.
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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** This site should have a soil stability rating of 3 under plant canopies and a rating of 2 to 3 in the interspaces using the soil stability kit test. The average should be a 3. Surface texture is silty clay loam. Vegetation cover, litter, biological soil crusts and surface rock reduce erosion.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface horizon is typically 5 inches deep. Structure is typically weak fine subangular blocky. Color is typically light brownish gray (2.5Y6/2). Use the specific information for the soil you are assessing found in the published soil survey to supplement this description.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Natural erosion would be expected in most storms and spring runoff, with little influence from the scant vegetation cover.
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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None. The higher clay content and platy structure on this site should not be confused with compaction layers.
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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: Non-sprouting shrubs (Mat Saltbush, Bud sagebrush, Winterfat)
- Sub-dominant: Warm season perennial grasses (Galleta) > perennial and annual native forbs (Desert trumpet) > Cool season grasses (Indian ricegrass) > Biological soil crusts
- Other: Functional/structural groups may appropriately contain non-native species if their ecological function is the same as the native species in the reference state (e.g. Siberian Wheatgrass, Forage kochia etc.)
- Biological soil crust is variable in its expression where present on this site and is measured as a component of ground cover.
- Forbs can be expected to vary widely in their expression in the plant community based upon departures from average

growing conditions.

Additional: Factors that contribute to temporal variability include erosion events, insects, and drought. Factors that contribute to spatial variability include slope, aspect, etc.

Following a recent disturbance such as drought or insects that removes the woody vegetation, native annuals (herbaceous species) may dominate the community. These conditions reflect a community phase within the reference state.

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** During years with average to above average precipitation, there should be very little recent mortality or decadence apparent in either the shrubs or grasses. During severe (multi-year) drought, up to 20% of the plants may die. There may be partial mortality of individual bunchgrasses and other shrubs during less severe drought.

14. **Average percent litter cover (%) and depth (in):** Litter cover (including under plants) nearly all of which should be fine litter. Depth should be 1 leaf thickness in the interspaces and under canopies.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 175-200 #/acre on an average year.

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:** Russian thistle, halogeton, annual mustards, common sunflower.

17. **Perennial plant reproductive capability:** All perennial plants should have the ability to reproduce sexually or asexually in most years, except in drought years.
