USDA Natural Resources
Conservation Service

Ecological site R028AY128UT
Desert Oolitic Dunes (Black Greasewood)

Accessed: 05/19/2024

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	01/23/2009
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Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Very minor rill development may be evident in the reference community only following significant storm or snow melt events. Any rill development will be short (< 6') and widely spaced (5' – 7'). Evidence of rills on dune slopes will decrease in the months following major weather events due to the affects of wind on this sites Oolitic sands.

2. **Presence of water flow patterns:** Slight evidence of water flow may be evident in the reference community only immediately following significant weather events. Flow patterns affect <3% of the site. High soil intake rates and excessive drainage limit water movement on soil surfaces. Any flow patterns present are normally <10 feet long, follow natural contours, and are typically spaced 10 to 15 feet apart.

3. **Number and height of erosional pedestals or terracettes:** None. Pedestaling and terracette development is prevented from developing because of the nature of the soils associated with this site. Some depositional mounding around perennial vegetation is normal.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground ranges from 40% - 60% in the reference community. Ground cover (the inverse of bare ground) typically includes: coarse fragments – 0% to 2%; plant canopy – 20% to 30%; litter – 15% to 20%

5. **Number of gullies and erosion associated with gullies:** Very rare. Some gully channels are a normal component of

desert environments. Gullies associated with this site are normally conveying runoff from higher elevation ecological sites. They will typically have unstable sides and bottoms as they travel through this sites Oolitic sands.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** Moderate evidence of wind generated soil movement is normal in reference state on this site. They typically have a mix of a few unstable dunes that are mixed with mostly stable ones that are healing. Evidence of wind generated blowouts may also be present; any blowouts present are being stabilized with perennial vegetation. Depositional mounding around perennial grass clumps is normal. Moderate coppice mounding under Four-wing saltbush and Black greasewood canopies is also normal.

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7. **Amount of litter movement (describe size and distance expected to travel):** Most litter resides in place within or under plant canopies. Some movement of fine material (< ¼") may move (2' – 4') in the direction of prevailing winds or down slope if being transported by water. Some accumulation is observed behind obstructions. Larger woody litter (> ½") is mostly found under or near shrubs.

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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 2 to 4. Surface textures are typically coarse loamy sands containing few rock fragments. Where surface soil structure is lost, soil stability ratings may decrease to 1 – 2 in the remaining soil.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface is approximately 5 inches deep and structure is very weak to loose, single grain. The A-horizon color is 10YR 6/2. Soils have an Ochric epipedon that extends 5 inches into the soil profile.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Healthy perennial grasses and shrubs in the reference community provides for the best infiltration and least runoff from storm events and snow melt. Soil movement is common even in healthy communities and is characteristic of the site.

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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. Soils are deep to very deep.

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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: Dominant: Sprouting shrubs (e.g. Black greasewood and Four-wing saltbush) 50 – 75%, >> cool season grasses (e.g. Indian ricegrass and Bottlebrush squirreltail) 3 – 6%.

    Sub-dominant: Sub-dominant: Perennial Forbs: (e.g. Shrubby seepweed) 20 - 25%,>> Sprouting shrubs (e.g. Shadscale and Spiny hopsage), 10 – 15%, > warm season grasses (e.g. Alkali sacaton) 1 – 3%.

    Other: Others: Shrubs (e.g. Iodinebush and Nevada jointfir 1-3%)

    Additional: Moss and lichen communities will normally be found under plant canopies while the cyanobacteria will be

found throughout the site. Functional/structural groups may appropriately contain non-native species if their ecological function is the same as the native species in the reference state. Perennial and annual forbs can be expected to vary widely in their expression in the plant community based upon departures from average growing conditions.

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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. There may be partial (<30%) mortality of individual bunchgrasses and other shrubs during severe drought.

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14. **Average percent litter cover (%) and depth (in):** Litter cover ranges from 15 to 20% with a spike when shrubs drop their leaves. Depth is typically about 1/4 inch.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 300 - 400 pounds on an average year.

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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:** Russian thistle, Redstem storksbill, annual mustards and Halogeton are likely to invade this site.

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17. **Perennial plant reproductive capability:** All perennial plant species have the ability to reproduce in most years except drought years.
