USDA Natural Resources
Conservation Service

Ecological site R030XD002CA
Desert Pavement

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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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Date	10/20/2014
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills are none. Rock fragments armor the soil surface.

2. **Presence of water flow patterns:** None

3. **Number and height of erosional pedestals or terracettes:** None

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground typically < 10% but may be as high as 20% in less developed pavement areas; surface rock fragments typically between 80 and 98% but may be as low as 65%; shrub canopy is typically < 5% and may be slightly higher in areas with weak pavement development.

5. **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):** Fine litter (foliage from grasses and annual & perennial forbs) expected to move distance of slope length during intense summer convection storms or rapid snowmelt events. Persistent litter (large woody material) will remain in place except during large rainfall events.

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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):** Much of the soil surface in this ESD is covered by gravel. In areas where the soil is present at the surface there can be as much as 5% incipient algal/fungal crust cover as well as trace amounts of cyanolichen crusts. Soil surface areas with biological crusts typically have a soil surface stability value of 5. Subsurface soil stability under the crust is usually 0 or single grained material. Shrubs in this ecological site tend to trap eolian material. Soil surface stability values under shrubs is often single grained material with a stability value of 0. Biological crusts may be present under shrubs but are more easily found in the intershrub spaces.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Desert pavement is composed of a gravel surface without much soil at the surface. Those areas of exposed soil at the surface may range in surface structure from single grain to strong very thick platy. The wide range of structure can be explained by eolian deposition forming the single grain structure while areas without a layer of eolian deposition can have a vesicular horizon which forms the strong very thick platy structure. Soil surface colors are very pale to light and typified. Organic matter of the surface 2 to 3 inches is less than 1 percent.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Sparse shrub canopy and associated litter may contribute to some infiltration at this site but this ecological site is dominated by gravel pavement which in combination with vesicular horizons greatly reduces infiltration and increases runoff. Areas with disturbed, open or weakly developed pavement have less runoff and higher infiltration rates.

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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. Subsoil argillic horizons should not be interpreted as compacted.

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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: Long-lived evergreen shrubs (creosote bush) = annual forbs

    Sub-dominant: associated shrubs (burrobush) > annual grasses > perennial grass

    Other:

    Additional: Annual forbs and annual grasses respond to the timing and amount of precipitation events. In some cases for this ecological site, annual production and cover may be higher than creosote production which is why annual forbs are listed under the dominant category. Although there is very little creosote bush at this site, the plant is perennial and remains at the site regardless of precipitation events.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Dead branches within individual shrubs are common. Burrobush and perennial grasses can be expected to show mortality during drought. A lack in the presence of annual species, live or standing dead may suggest extreme

drought conditions exist where grazing is not present.

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14. **Average percent litter cover (%) and depth (in):** Percent litter in the interspaces between the very few plants is trace to 5%. Litter is usually very small pieces of plant debris.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** For normal or average growing season ± 60 lbs/ac. Favorable years ± 100 lbs/ac and unfavorable years ± 10 lbs/ac. Areas with broken up areas of desert pavement can have higher production than these listed here.

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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:** Potential invaders on this site include red brome, redstem filaree, and Mediterranean grass. Although a potential exists for these species to become invaders, the harsh conditions of this ecological site are likely to prevent dominance by any of these non-native species. Mediterranean grass does have the potential to exist as a co-dominant.

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17. **Perennial plant reproductive capability:** Droughty conditions, gravel pavement and vesicular horizons greatly limit seed crops at this site when compared to surrounding areas without pavement. Creosote bush may depend solely on clonal reproduction. Burrobush establishment may depend on favorable years and is found mainly at the edges of the pavement or in open areas within the pavement. There is also very little vegetation cover which in combination with very little seed production greatly limits the perennial plant reproductive capability of this site.
