

Ecological site EX043B18I038 Droughty Steep 19-24" PZ Cryic Beaverhead Mountains

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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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Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills:** Rills will be minimal under Reference State. Rills, if present, will be inconspicuous and short. Less than 3 feet and typically on the steepest south facing slopes.

- 2. Presence of water flow patterns:** Water flow patterns will be minimal under Reference State. If present, water flow patterns will be short and disconnected and typically on the steepest slopes.

- 3. Number and height of erosional pedestals or terracettes:** Pedestals and terracettes are rare to nonexistent under the Reference State. If present, they will be inconspicuous and hard to identify under the steepest slopes.

- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground will be less than 10 percent.

- 5. Number of gullies and erosion associated with gullies:** Gullies will not be present.

- 6. Extent of wind scoured, blowouts and/or depositional areas:** Wind scoured, blowouts, and depositional areas will not exist on this site under Reference State.

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7. **Amount of litter movement (describe size and distance expected to travel):** Litter movement is very limited, with only fine herbaceous litter moving no more than 4 inches (10 centimeters) from its origin during rare runoff 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):** Soils of this site are stable and should have ratings of 3-5 using the Soil Stability Methods.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil Structure at the surface is typically strong to medium fine granular. The A horizon should be 6-8 inches thick with color, when wet, typically ranging in Value of 3 or less and Chroma of 3 or less. Local geology may affect color in which it is important to reference the Official Series Description (OSD) for characteristic range
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Evenly distributed across the site, bunchgrasses improve infiltration while rhizomatous grass protects the surface from runoff forces. The Droughty Steep ecological site is well drained and has a moderate infiltration rate. An even distribution of mid-statured bunchgrasses with 60 to 65 percent of production dominated by deep rooted grasses, 10 to 15 percent short grasses and rhizomatous grasses with forbs (15 percent), shrubs (10 percent), and trees (trace).
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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):** Not present, some soil profiles may contain an abrupt transition to an argillic horizon which can be interpreted as compaction; however, the soil structure is typically medium granular to subangular blocky, where a compaction layer will tend to be structureless.
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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: Cool season mid-statured bunchgrasses (bluebunch wheatgrass, Columbia needlegrass, green needlegrass, Richardsons needlegrass, rough fescue, spike fescue)
- Sub-dominant: forbs = shrubs > cool season short-grasses > rhizomatous grasses >> trees
- Other:
- Additional:
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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Mortality in herbaceous species is not evident. Species with bunch growth forms may have some natural mortality in centers.
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14. **Average percent litter cover (%) and depth (in):** Total litter cover ranges from 35 to 55 percent. Most litter is irregularly distributed on the soil surface and is typically less than 0.25 inches thick

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Average production is 1485 pounds per acre (lb/ac) or 1664.5 kilograms per hectare (kg/ha)
Low production is 1025 lb/ac or 1148.9 kg/ha
High production is 2000 lbs/ac or 2242 kg/ha

Production values can vary greatly due to site conditions and precipitation patterns. These values represent the Relative Value (RV) ranges for this site...outliers within the Reference State do exist

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:** dandelion (*Taraxicum* spp), cheatgrass (*Bromus tectorum*), field brome (*Bromus arvensis*), spotted knapweed (*Centaurea stoebe*), yellow toadflax (*Linaria vulgaris*), leafy spurge (*Euphorbia esula*), and Kentucky bluegrass (*Poa pratensis*)

Note: this list may not be fully comprehensive as unknown populations of weeds may exist

Native species with the ability to indicate degradation are Sandberg bluegrass (*Poa secunda*), big sagebrush (*Artemisia tridentata*), three-tip sagebrush (*Artemisia tripartita*), broom snakeweed (*Gutierrezia sarothrae*), rubber rabbitbrush (*Ericameria nauseosa*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), Rocky Mountain juniper (*Juniperus scopulorum*), and Douglas fir (*Pseudotsuga menziesii*). Species presence alone does not imply degradation.

17. **Perennial plant reproductive capability:** In the reference condition, all plants are vigorous enough for reproduction either by seed or rhizomes in order to balance natural mortality with species recruitment. Density of plants indicates that plants reproduce at levels sufficient to fill available resource.
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