

Ecological site R105XY020WI Sandstone Colluvium Bluff Prairie

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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	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills are none to very rare. Very few rills expected and any present associate with deer tails.

2. **Presence of water flow patterns:** Water flow patterns are none to rare. Short intermittent flow patterns may increase after a prescribed fire, especially if the site hasn't greened up before an intense rainfall event. Occasionally deer trails run diagonally up slope and are a place where water flow patterns follow.

3. **Number and height of erosional pedestals or terracettes:** Pedestals are none to few.

Wind pedestals are none. Terracettes are few to common. If the site has bedrock ledges or cliffs above, it tends to funnel wild life or human trails. These trails are typically along the contour below movement restricting sandstone ledges or cliffs. There can be a series of parallel terracettes that result in this way. The terracettes may not be continuous for any distance. Bare ground is usually associated with terracettes resulting from wildlife trails.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground is noticeable amidst the thin short grass cover. After a fire bare ground increase. Bare Ground ranges from 13-41% depending mostly upon the time elapsed since the last fire. After an early spring fire, bare ground can be 37-41%. If there hasn't been a fire for a couple of years, bare ground can range from 13 - 41%. The steepest slopes and the most convex/convex slope shape areas would be expected to have the most bare ground. Bare ground would expect to increase to more than 37% the first year following a prescribed fire. Multi-year droughts can also increase bare ground.
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5. **Number of gullies and erosion associated with gullies:** Typically there are none. If the base of the bluff prairie slope is being cut by a river, gullies can work their way up and into this ecological site.
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6. **Extent of wind scoured, blowouts and/or depositional areas:** None.
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7. **Amount of litter movement (describe size and distance expected to travel):** Litter movement is rare to none. If litter movement is present, it is along wildlife trails running up slope. But even along deer trails litter movement occurs only for short distances. Litter movement would be expected to be the greatest following an intense thunder storm shortly after a fire.
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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):** Soil surface resistance to erosion is good. Soil stability values should be 3 to 6 on most soil textures found on this site.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color**

and thickness): Surface structure is typically granular. Soil surface colors are very dark grayish brown to very dark brown - mollic colors. Soils are may or may not have a mollic epipedon. Organic matter of the surface 3 to 11 inches is about 3 percent, dropping off rapidly below.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Changes in plant community composition are expected around sandstone ledges and cliffs where shrubs and immature trees may encroach and shade out grassy species. Runoff increases around bedrock outcrops. Short steep slope breaks on convex/convex shoulders often have higher percentages of rock fragments on the surface and thinner shorter herbaceous cover resulting in lower infiltration and higher runoff. Drainageways and areas with linear/linear or linear/concave slope shape may have a higher percent cover coming from shrubs or small trees and also tend to have higher percent cover of taller grasses and generally thicker herbaceous 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):** Compacted layers are none.
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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: Deep-rooted, warm season, perennial grasses, perennial forbs, short shrubs (lead plant and smooth sumac)

Sub-dominant: cool season annual forbs

Other:

Additional: After prescribed fires, the functional/structural dominance of perennial forbs increases and shrubs decrease. With lengthening duration of fire return shrubs increase and small trees begin to appear.

13. **Amount of plant mortality and decadence (include which functional groups are**

expected to show mortality or decadence): No or little plant mortality is apparent. Most of the perennial plants are long-lived. After a fire dead shrubs and small trees map persist for a time.

14. **Average percent litter cover (%) and depth (in):** Litter cover ranges from 30-68%. After prescribed fires, litter cover and depth decreases dramatically. Because annual production is relatively low, it may take several to five growing seasons for litter to reach pre-fire levels.
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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 (end of July beginning of August) \pm 915 lbs/ac; Favorable years \pm 1017 lbs/ac and unfavorable years \pm 610 lbs/ac.
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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 are mostly woody species and include: eastern redcedar, smooth sumac, gray dogwood, several Rubus species, common buckthorn, honeysuckle, paper birch, quaking aspen, burr oak, black oak, and common juniper. Potential herbaceous invaders include: Kentucky bluegrass, and sweetclover.
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17. **Perennial plant reproductive capability:** All functional groups should reproduce in average (or normal) and above average growing season years. Only limitations to reproductive capability are weather related, natural disease, insect infestations, or combinations of all of the disturbances.
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