

Ecological site R105XY021WI Limestone Colluvium Bluff Prairie

Accessed: 04/19/2024

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.

Author(s)/participant(s)	Peter Hartman and John Zinn
Contact for lead author	John.Zinn@mn.usda.gov
Date	07/29/2014
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 but when they are present, can be expected in drainageways. Water flow patterns typically are short and intermittent in drainageways, starting and ending within 50 feet, very rarely going down the entire bluff prairie slope length. Short intermittent flow patterns may increase after a prescribed fire, especially if the site hasn't greened up before an intense rainfall event.

- 3. Number and height of erosional pedestals or terracettes:** Pedestals are none. Wind pedestals are none.

- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground is typically not common under relatively thick vegetation cover of summer. After a fire bare ground increase greatly. Bare Ground ranges from 3-42% depending mostly upon the time elapsed since the last fire. After an early spring fire, bare ground can be 37-42%. If there hasn't been a fire for a couple of years, bare ground can range from 3 -6%. 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 35% the first year following a prescribed fire. Multi-year droughts can also increase bare ground.

- 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):** Litter movement is rare to none. If litter movement is present, it is in drainageways. But even in drainageways litter movement occurs only for short distances, usually starting and stopping within 50 feet. Litter movement would be expected to be the greatest following an intense convection storm shortly after a fire.
-
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 very good. Should have great aggregate stability because of high OM and good soil structure. Soil stability values should be 5 to 6 on most soil textures found on this site, but could range from 4 to 6.
-
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 black to very dark brown and soils are typified by a mollic epipedon. Organic matter of the surface 5 to 8 inches is typically more than 3 percent dropping off slowly below. Mollic colored A horizons can range from 10 to more than 20 inches thick.
-
10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The plant community composition is relatively uniform. Changes in plant community composition are expected around rock outcroppings, cliffs, boulders and concentrated areas of flagstones 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 may have a higher percent cover coming from shrubs or small trees, but drainageways also tend to have higher percent cover of taller grasses and generally also have thicker herbaceous cover.
-
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.
-
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 may persist for a time.

14. **Average percent litter cover (%) and depth (in):** Litter cover ranges from 29-69%. After prescribed fires, litter cover and depth decreases dramatically. Depending on climate and vegetative recovery, litter will increase to pre-fire levels in one to five growing seasons.

15. **Expected annual above-ground 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 1760 lbs/ac; Favorable years \pm 1955 lbs/ac and unfavorable years \pm 1173 lbs/ac.

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.

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.
