Ecological site R066XY059NE Thin Upland

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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.

Author(s)/participant(s)	Original Author: Stan Boltz Version V participants: Emily Helms, Nadine Bishop, Jeff Nichols
Contact for lead author	jeffrey.nichols@usda.gov
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Approved by	Suzanne Mayne-Kinney
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills: None. Rills are not expected on this site.
- 2. **Presence of water flow patterns:** Typically, none. Water flow patterns are not expected on gentle slopes. On steeper slopes (greater than 15 percent) water flow patterns may occur but will be barely visible and discontinuous.
- Number and height of erosional pedestals or terracettes: Typically, none. Bunchgrasses may be slightly pedestalled (0.5 inch/1.25 cm) with no exposed roots on steeper slopes (greater than 15 percent), becoming more common as slopes become steeper.
- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground): Bare ground is typically 5 percent or less. Multi-year drought and/or wildfire can increase bare ground to 10 percent for up to two years following the disturbance.

Bare ground is exposed mineral soil that is not covered by vegetation (basal and/or foliar canopy), standing dead vegetation, gravel/rock, and visible biological crust (e.g., lichen, mosses, algae)

- 6. Extent of wind scoured, blowouts and/or depositional areas: None. Wind-scoured areas and depositional areas are not expected on this site.
- 7. Amount of litter movement (describe size and distance expected to travel): Litter should fall in place. Slight amount of movement of fine litter (less than 12 inches) from water is possible, but not normal. Litter movement from wind is not expected.
- Soil surface (top few mm) resistance to erosion (stability values are averages most sites will show a range of values): Soil stability ratings should typically be 5 to 6, normally 6. Surface organic matter adheres to the soil surface. Soil surface fragments will typically retain structure indefinitely when dipped in distilled water.
- 9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): The A-horizon should be 4 to 12 inches (10.2-30.5 cm) thick. Soil is brown, grayish brown, to light brownish gray (values of 3 to 6) when dry and very dark grayish brown to dark grayish brown (values of 3 to 4) when moist. Structure is typically weak fine or very fine granular at least in the upper A-horizon.

Crofton and Keota are the primary soil series correlated to the Thin Upland ecological site.

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: The functional/structural groups provide a combination of rooting depths and structure which positively influences infiltration. Combination of shallow and deep rooted species (mid and tall rhizomatous and tufted perennial cool season grasses) with fine and coarse roots positively influences infiltration. Invasion of introduced cool-season grasses such as annual bromes, Kentucky bluegrass, and smooth brome may have an adverse impact on infiltration and runoff. Woody encroachment may also negatively influence infiltration

The expected composition of the plant community is approximately 75 to 85 percent perennial grasses and grass-likes, 5 to 15 percent forbs, and 5 to 10 percent shrubs. The perennial grass and grass-like component is made up of C4, talland midgrasses (15-35%); C3, bunch grasses (15-30%); C4, short grasses (10-20%); C3, rhizomatous grasses (5-15%); grass-likes (5-10%).

- 11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): None. A compaction layer should not be present.
- 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: Phase 1.1

1. Native, perennial, C4 Tall- and Midgrass, 345-805#/ac, 15-35% (2 species minimum): big bluestem, little bluestem, sideoats grama.

2. Native, perennial, C3, bunchgrass, 345-690 #/ac, 15-30% (3 species minimum): green needlegrass, needle and thread, porcupinegrass, prairie Junegrass.

Phase 1.2

1. Native, perennial, C4 tall- and midgrass, 570-1140, 30-60% (2 species minimum): big bluestem, little bluestem, sideoats grama, tall dropseed.

2. Native, perennial, C4, shortgrass, 285-665 #/ac, 15-35% (1 species minimum): blue grama, hairy grama, buffalograss, threeawn.

Phase 1.3

1. Native, perennial, C4 shortgrass, 200-450 #/ac, 20-45% (2 species minimum): threeawn, blue grama, hairy grama, buffalograss.

2. Grass-likes, 150-250 #/ac, 15-25% (1 species minimum): sedge.

Sub-dominant: Phase 1.1

1. Native, perennial, warm-season shortgrass, 230-460 #/ac, 10-20% (1 species minimum): blue grama, hairy grama, buffalograss.

Native, perennial, cool-season, rhizomatous grass, 115-345 #/ac, 5-15% (1 species minimum): western wheatgrass.
Native forb, 115-345 #/ac, 5-15% (8 species minimum): blacksamson echinacea, milkvetch, scarlet globemallow,

white prairie clover, dotted blazing star, Cuman ragweed, white sagebrush, scarlet beeblossom, Nuttall's sensitive-briar.

Phase 1.2

1. Grass-likes, 190-285 #/ac, 10-15% (1 species minimum): sedge.

Phase 1.3

1. Native, perennial, C4 tall- and midgrass, 50-200 #/ac, 5-20% (3 species minimum): tall dropseed, little bluestem, sideoats grama.

2. Native forbs, 50-150 #/ac, 5-15% (8 species minimum): blacksamson echinacea, tarragon, white heath aster, Cuman ragweed, scarlet beeblossom, milkvetch, white sagebrush, scarlet globemallow, and other forbs that vary from location to location.

Other: Minor - Phase 1.1

1. Grass-like, 115-230 #/ac (5-10%): sedges

2. Shrub, 115-230 #/ac, 5-10%: prairie sagewort and other shrubs which vary from location to location.

Minor - Phase 1.2

- 1. Forbs, 95-190#/ac, 5-10%: forbs vary from location to location.
- 2. Shrubs, 95-190 #/ac, 5-10%: shrubs vary from location to location.

3. Native, perennial, C3 bunchgrass, 0-95 #/ac, 0-5%: green needlegrass, needle and thread, porcupinegrass, prairie Junegrass.

2. Non-native, C3 grasses, 0-57 #/ac, 0-3%: Kentucky bluegrass, cheatgrass.

3. Native, perennial, C3 rhizomatous grass, 0-95 #/ac, 0-5%: western wheatgrass.

Minor - Phase 1.3

- 1. Shrubs, 50-100 #ac, 5-10%: prairie sagewort and other shrubs that vary from location to location.
- 2. Non-native, C3 grass, 0-100 #/ac, 0-10%: Kentucky bluegrass, cheatgrass.
- 3. Native, perennial, C3 bunchgrass, 080 #/ac, 0-8%: needle and thread, prairie junegrass.

4. Native, perennial, C3 rhizomatous grass, 0-50 #/ac, 0-5%: western wheatgrass.

Additional: The Reference Community (1.1) consists of seven F/S groups which include, in order of abundance, native, perennial, C4 tall- and midgrass; native, perennial, C3 bunchgrass; native, perennial, C4 shortgrass; native, perennial, C3, rhizomatous grass = native forbs; grass-like = shrubs.

The Degraded Native Grass Community (1.2) includes eight F/S groups which include native, perennial, C4 tall- and midgrass; native, perennial, C4 shortgrass; grass-likes; native forbs = shrubs; native, perennial, C3 bunchgrass = non-native, C3 grass; and native, perennial, C3, rhizomatous grass.

The At-Risk Community (1.3) consists of eight F/S groups which include native, perennial, C4 shortgrass; grass-likes; native, perennial, C4, tall- and midgrass; native forbs; shrubs = non-native, C3 grasses; native, perennial, C3 bunchgrass; and native, perennial, C3 rhizomatous grass.

- 13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): Bunch grasses have strong, healthy centers with few (less than 3 percent) dead centers. Shrubs may show some dead branches (less than 5 percent) as plants age..
- 14. Average percent litter cover (%) and depth (in): Plant litter cover is evenly distributed throughout the site and is expected to be 70 to 80 percent and at a depth of 0.25 to 0.50 inch (0.65-1.3 cm). Litter cover during and following drought can range from 50 to 60 percent
- 15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annualproduction): The representative value (RV) for annual production is 2,300 pounds per acre on an air dry weight basis. Low and High production years should yield 1,800 and 2,800 pounds per acre respectively.
- 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: No non-native invasive species are present. Annual bromes (cheatgrass and Japanese/field), Kentucky bluegrass, smooth brome, absinth wormwood, common mullein, Kentucky bluegrass, smooth brome, eastern redcedar are known invasives that have the potential to become dominant or co-dominant on this site. Consult the state noxious weed and state watch lists for potential invasive species. Note: species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants.
- 17. **Perennial plant reproductive capability:** All perennial species exhibit high vigor relative to recent weather conditions. Perennial grasses should have vigorous rhizomes or tillers; vegetative and reproductive structures are not stunted. All perennial species should be capable of reproducing annually.