USDA Natural Resources Conservation Service

Ecological site R106XY067NE
Saline Subirrigated

Accessed: 05/11/2025

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

MLRA notes

Major Land Resource Area (MLRA): 106X–Nebraska and Kansas Loess-Drift Hills

Named the “Nebraska and Kansas Loess-Drift Hills,” Major Land Resource Area (MLRA) 106 is divided almost evenly between southeastern Nebraska (52%), and northeastern Kansas, (48%). The northern border is located on the north end of Saunders County, Nebraska, and the MLRA stretches into Douglas County, Kansas in the south. The cities of Beatrice and Lincoln are the major population centers in the north, while Topeka and Lawrence are the primary cities in the south. The approximately seven million acre landscape covers all or parts of 30 counties between the two states. This dissected glacial drift plain primarily consists of broad, smooth ridgetops, and slopes ranging from nearly level to steep. The elevation in MLRA 106 decreases from west to east, and ranges from nearly 1,650 feet to less than 790 feet above sea level. Stream valleys in this landscape are narrow and bordered by steep hills, with 10 to 20 feet of local relief. The river valleys are broader, and may drop up to over 160 feet below the adjacent hilltops. The Platte, Little Nemaha, and the North Fork of the Big Nemaha Rivers flow through the Nebraska side of the MLRA, while the Black Vermillion, the Soldier, and the Delaware Rivers are the major waterways on the Kansas side. The Big Blue River runs through both states while The Salt Creek hydrological system located near Lincoln, Nebraska provides habitat for the only known population of the Federally-listed endangered Tiger Salt Beetle.
The uplands are primarily comprised of glacial drift underlying a mantle of loess, while alluvial deposits are found in the stream and river valleys. Limestone and shale quarries are also located in MLRA 106. The predominant soil orders in this MLRA are mesic, udic, Mollisols, Alfisols, and Entisols. Loams and clays are the primary soil textures in this landscape.

Sixty-two percent of the land in this MLRA has been broken out of native prairie and farmed, while only 23 percent of the grasslands remain intact. Livestock grazing, primarily by cattle, is the main industry on these remnants. Corn, wheat, soybeans, and grain sorghum are the primary commodity crops, but a significant number of acres are also planted to alfalfa for harvest as hay.
With annual precipitation averaging from 40 inches in the southeast, to 28 inches in the northwest, irrigation for crop production isn't a critical factor in most years.
The historical matrix vegetation type is Tallgrass Prairie, with big and little bluestem, switchgrass, Indiangrass, sideoats, and blue grama making up the bulk of the warm-season species; western wheatgrass is the dominant cool-season grass in the north, tall fescue is in the south. Large- and small-patch vegetative communities are found primarily along the riparian zones, and on both upland and lowland saline sites. Woodlands make up about 6 percent of MLRA 106, consisting primarily of green ash, oak, hackberry, boxelder, and maple trees.
Wildlife flourishes in this combination of crop and grassland environments. In a landscape historically occupied by bison herds, white-tailed deer are now the most abundant wild ungulates. A variety of smaller species, including coyote, raccoon, opossum, porcupines, muskrat, beaver, squirrel, and mink thrive in the region, as do several upland bird species. Native grassland bird populations are somewhat limited by the lack of contiguous native prairie and the fragmented habitat created by the farmland.
The rivers, streams, and lakes harbor excellent fisheries, and migrating and local waterfowl use the wetland complexes. These complexes provide ideal habitat for a number of wading and shore bird species as well.
This landscape serves as a backdrop for a disturbance-driven ecosystem, evolving under the influences of herbivory, fire, and variable climate. Historically, these processes created a heterogeneous mosaic of plant communities and structure heights across the region. Any given site in this landscape experienced fire every three to four years. The fires were caused by lightning strikes and also were set by native Americans, who used fire for warfare, signaling, and to refresh the native grasses. The indigenous inhabitants understood the value of fire as a tool, and that the highly palatable growth following a fire provided excellent forage for their horses, and attracted grazing game animals such as bison and elk.
Land use patterns by post-European settlement has greatly altered the historical fire regime, allowing the expansion of the woody component. Introduction of eastern redcedar (ERC) as a windbreak species further facilitates invasion by this species.
While eastern redcedar is native to the landscape, the historic population in MLRA 106 was limited to isolated pockets in rugged river drainageways that were subsequently insulated from fire. Widespread plantings of windbreaks with eastern redcedar as a primary component have provided a seed source for the aggressive woody plant. The ensuing encroachment into the native grasslands degrades the native wildlife habit and causes significant forage loss for domestic livestock. However, since it is not a root sprouter, eastern redcedar is very susceptible to fire when under six feet tall. Management with prescribed fire is exceedingly effective if applied before this stage. Larger redcedars can also be controlled with fire, but successful application requires the use of specifically-designed ignition and holding techniques.
Fragmentation of the native grasslands by conversion to cropland, transportation corridors, and other developments have effectively disrupted the natural fire regime of this ecosystem. This has allowed encroachment by native and introduced shrubs and trees into the remnants of the native prairie throughout the MLRA. Aggressive fire suppression policies have exacerbated this process to the point that shrub and tree encroachment is a major ecological issue in the majority of both native and reseeded grasslands.

Classification relationships

Major Land Resource Area (MLRA): 106 Major Land Resource Area (MLRA) (USDA-Natural Resources Conservation Service, 2006)

General information for MLRA 106:

Fenneman (1916) Physiographic Regions Division – Interior Plains
Province – Central Lowland
Section – Dissected Till Plains

USFS (2007) Ecoregions
Domain – Humid Temperate
Division – Prairie
Province – Prairie Parkland (Temperate)
Section – Central Dissected Till Plains (251C)

EPA Ecoregions (Omernik 1997)
I – Great Plains (9)
II – Temperate Prairies (9.2)
III – Western Corn Belt Plains (9.2.3)
IV – Loess and Glacial Drift Hills (47i)

Associated Counties
Nebraska: Butler, Cass, Gage, Jefferson, Johnson, Lancaster, Nemaha, Otoe, Pawnee, Richardson, Saline, Saunders, Seward

Kansas: Atchison, Brown, Doniphan, Douglas, Franklin, Jackson, Jefferson, Johnson, Leavenworth, Marshall, Nemaha, Osage, Pottawatomie, Shawnee, Wabaunsee, Washington, Wyandotte

Ecological site concept

This site consists of alluvial soils with varying degrees of seasonal moisture. Distinguishing features are an accumulation of salts within the root zone, and a seasonal or perennial water table within 4 feet from the surface. The Saline Subirrigated sites in Lancaster County, Nebraska provide critical habitat for the only known population of the federally endangered Salt Creek Tiger Beetle.

Associated sites

R106XY032NE	**Subirrigated** Subirrigated- Often adjacent to Saline Subirrigated. No visible surface salts, plant community not dominated by salt tolerant species. Higher vegetative production than Saline Subirrigated.
R106XY065NE	**Wet Subirrigated** Wet Subirrigated- Often found in association with Saline Subirrigated. no visible surface salts, plant community is not dominated by salt tolerant species. Higher vegetative production than Saline Subirrigated.
R106XY083NE	**Saline Lowland** Saline Lowland- Positioned higher on the landscape than the Saline Subirrigated site.

Similar sites

R106XY083NE	**Saline Lowland** Positioned higher on the landscape than the Saline Subirrigated site. The plant community has more upland species.
R106XY032NE	**Subirrigated** This site has no visible surface salts, and the plant community is not dominated by salt tolerant species. Higher vegetative production than Saline Subirrigated.
R106XY065NE	**Wet Subirrigated** Often found in association with Saline Subirrigated. No visible surface salts, plant community is not dominated by salt tolerant species. Higher vegetative production than Saline Subirrigated.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Spartina pectinata* (2) *Distichlis spicata*

Physiographic features

The Saline Subirrigated site occurs on nearly level floodplains adjacent to streams and rivers. These soils are seasonally wet, have an accumulation of salts within the root zone, and are subject to flooding. These soils receive runoff from areas higher on the landscape.

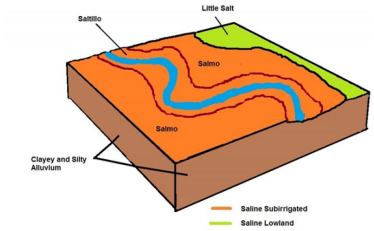


Figure 2. Saline Subirrigated Block Diagram

Table 2. Representative physiographic features

Landforms	(1) Salt marsh (2) Flood plain
Flooding frequency	Occasional to frequent
Ponding duration	Brief (2 to 7 days)
Ponding frequency	Occasional to frequent
Elevation	747–1,692 ft
Slope	0–2%
Water table depth	0–48 in
Aspect	Aspect is not a significant factor

Climatic features

Like most Great Plains landscapes, the climate in this MLRA is under the sway of the continental effect. This creates a regime of extremes, with summer highs often in the triple digits, and winter lows plunging well below zero. Blizzards can occur anytime between early fall and late spring, often dropping the temperature more than 50 degrees in just a few hours. These events can pile up several feet of snow, often driven by winds in excess of 50 miles an hour. The resulting huge snow drifts can cause serious hardship for livestock, wildlife, and humans. Winters can be open, with bare ground for most of the season, or closed, with up to several feet of snow persisting until March. Most winters have a number of warm days, interspersed with dropping temperatures, usually associated with approaching cold fronts. Spring brings violent thunderstorms, hail, and high winds. Tornadoes occur frequently.

About three-fourths of the precipitation falls as high-intensity, convective thunderstorms from late in spring through early in autumn.

The average annual precipitation gradient trends higher from northwest (28”) to southeast (40”), and the average annual temperature gradient trends higher from north (50°F) to south (55°F).

Daily winds range from an average of 14 miles per hour during the spring to 11 miles per hour during the late summer. Occasional strong storms may bring brief periods of high winds with gusts to more than 80 miles per hour.

Growth of native cool-season plants begins in early April and continues to about mid-June. Native warm-season plants begin growth in early June, and continue to early August. Green-up of cool-season plants may occur in September and October..

Table 3. Representative climatic features

Frost-free period (average)	159 days
Freeze-free period (average)	177 days

Precipitation total (average)	33 in

Climate stations used

- (1) AUBURN 5 ESE [USC00250435], Auburn, NE
- (2) VIRGINIA [USC00258875], Virginia, NE
- (3) WAHOO [USC00258905], Wahoo, NE
- (4) WEEPING WATER [USC00259090], Weeping Water, NE
- (5) LINCOLN MUNI AP [USW00014939], Lincoln, NE
- (6) BEATRICE 1N [USC00250622], Beatrice, NE
- (7) MEAD 6S [USC00255362], Ithaca, NE
- (8) RAYMOND 2NE [USC00257055], Raymond, NE
- (9) TABLE ROCK 4 N [USC00258410], Table Rock, NE
- (10) ASHLAND NO 2 [USC00250375], Ashland, NE
- (11) TECUMSEH 1S [USC00258465], Tecumseh, NE
- (12) LINCOLN UNIV PWR PLT [USW00014971], Lincoln, NE

Influencing water features

The Saline Subirrigated site is by definition connected to the water table, and subsequently affected by seasonal and periodic fluctuations. The associated vegetative communities are highly influenceded by both the water level fluctuations and the high degree of salinity. These two factors limit both the species diversity and the overall vegetative production on the site.

Soil features

The soils associated with the Saline Subirrigated site are very deep, poorly and somewhat poorly drained clayey and silty alluvium containing high amounts of sodium. They were formed on floodplains of 0 to 2 percent, with low to moderately high saturated hydraulic conductivity.
The depth to the water table ranges from the surface, to four feet.
The primary series correlated to this site are: Salmo, Saltillo, and Zoe.

Table 4. Representative soil features

Surface texture	(1) Silty clay loam (2) Silt loam
Drainage class	Poorly drained to somewhat poorly drained
Soil depth	0–80 in
Available water capacity (0-40in)	8.9–10.7 in
Calcium carbonate equivalent (0-40in)	0–19%
Electrical conductivity (0-40in)	1–20 mmhos/cm
Sodium adsorption ratio (0-40in)	13–90
Soil reaction (1:1 water) (0-40in)	6.2–8.5

Ecological dynamics

Saline Subirrigated sites developed under Northern Great Plains climatic conditions, light to severe grazing by bison and other large herbivores, sporadic natural or man-caused wildfires, and other biotic and abiotic factors

which typically influence soil/site development. This continues to be a disturbance-driven site, by herbivory, fire, and variable climate. Changes occur in the plant communities due to weather variations, impacts of native and/or exotic plant and animal species, and management actions.

One of the primary impacts to this site introduced by European-man is season-long continuous grazing by domestic livestock. This management practice causes the repeated removal of the growing point and excessive defoliation of the leaf area of individual tall warm-season grasses. The resulting reduction of the ability of the plants to harvest sunlight depletes the root reserves, subsequently decreasing the root mass. This negatively impacts the ability of the plants to compete for life-sustaining nutrients, resulting in declining vigor and eventual mortality. The space created in the vegetative community is then occupied by a species that evades the negative grazing impacts by a growing season adaptation (such as a cool season), a shorter structure, or a reduced palatability mechanism.

The State-and-Transition Model (STM) is depicted below, and is made up of a Reference State, a Degraded State, and a Sod-busted State. Each state represents the crossing of a major ecological threshold due to alteration of the functional dynamic properties of the ecosystem. The main properties observed to determine this change are the soil and vegetative communities and the hydrological cycle.

Each state may have one or more vegetative communities which fluctuate in species composition and abundance within the normal parameters of the state. Within each state, communities may degrade or recover in response to natural and man-caused disturbances such as variation in the degree and timing of herbivory, presence or absence of fire, and climatic and local fluctuations in the precipitation regime.

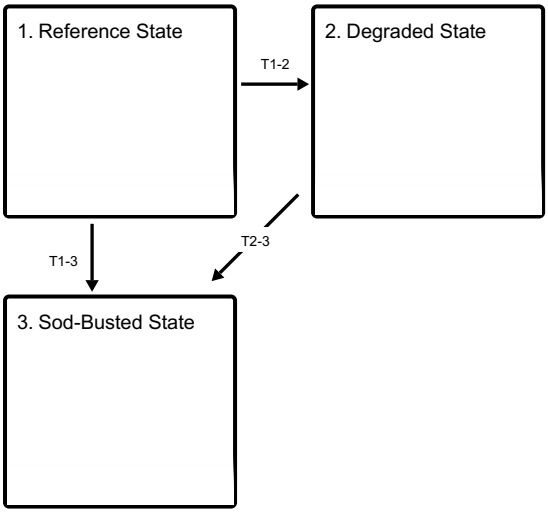
Interpretations are primarily based on the Reference State, and have been determined by study of rangeland relic areas, areas protected from excessive disturbance, and areas under long-term rotational grazing regimes. Trends in plant community dynamics have been interpreted from heavily grazed to lightly grazed areas, seasonal use pastures, and historical accounts. Plant communities, states, transitional pathways, and thresholds have been determined through similar studies and experience.

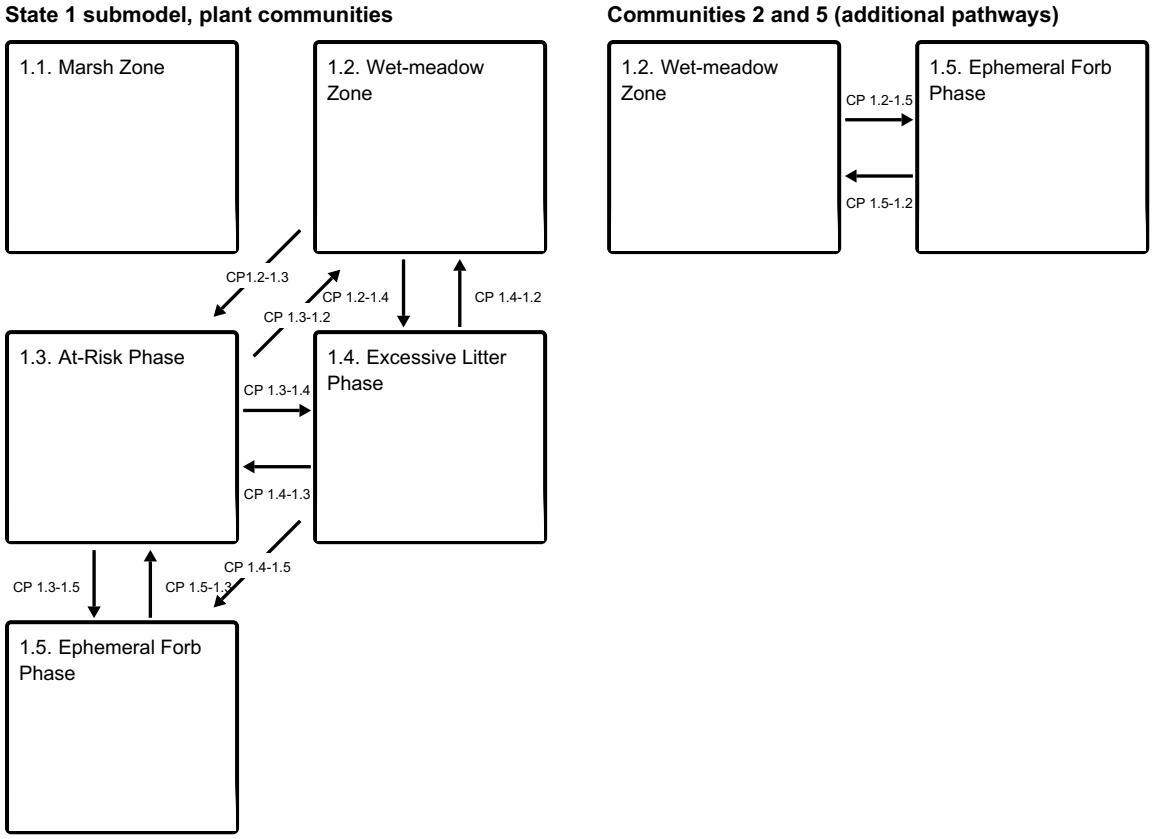
Growth of native cool-season plants begins about April 1, and continues to about June 15. Native warm-season plants begin growth about May 15, and continue to about August 15. Green-up of cool-season plants may occur in September and October if adequate moisture is available.

The following is a diagram illustrating the common plant communities that can occur on the site and the transition pathways between communities.

State and transition model

Ecosystem states





State 1
Reference State

This state describes the range of vegetative community phases that occur on the Saline Subirrigated site where the natural processes are mostly intact. The Marsh Zone is a semi-permanently flooded portion of the site, while the The Wet meadow Zone is a representation of the native plant community phase that occupies the seasonally wet areas of the site that have been minimally altered by management. The At-Risk and the Excessive Litter Communities are the phases that result from management decisions that are unfavorable for a healthy Reference Community. The Ephemeral Forb Community is the result of a high-intensity disturbance event. High perennial grass cover and production allows for increased soil moisture retention, vegetative production, and overall soil quality.

Community 1.1
Marsh Zone

Figure 7. Saunders County, Nebraska

The Marsh Zone represents the reference community that occupies the semi-permanently flooded areas of this site. The presence of water, and the excessive salinity make this site less vulnerable to management practices. Salt marsh bulrush and narrow-leaf cattail are the dominant vegetative species in this community.

Community 1.2
Wet-meadow Zone

Figure 8. Arbor Lake Lancaster County, Nebraska

The Wet Meadow Zone represents the reference community that occupies the seasonally wet areas of the site. This community is vulnerable to impact by management practices and is dominated by salt tolerant plants. Prairie cordgrass, inland saltgrass, switchgrass, and western wheatgrass are the primary grass species. Heath aster, sea blight and salt wort are some of the forbs present. The average annual vegetative production of this community is 3,800 lbs. per acre.

Community 1.3
At-Risk Phase

This community has suffered the loss of most of the tall and mid-grasses, and has become dominated by inland saltgrass and foxtail barley. Forbs are increasing. Due excessive livestock hoof action and the loss of the deeper rooted grass species, a compaction layer may begin to develop. The energy cycle and the hydrological cycle are beginning to be negatively impacted as well. Without a change in management, this community will cross an ecological point of no return, and move into the Degraded State.

Community 1.4
Excessive Litter Phase

The Excessive Litter Community Phase describes the response of the community to the removal of the natural disturbances of herbivory and fire. As the undisturbed duff layer deepens, infiltration of the precipitation is interrupted, and evaporation increases significantly, simulating drought-like conditions.

Community 1.5
Ephemeral Forb Phase

This community describes the flush of forbs that occurs in response to a major disturbance or combination of disturbances. Growing season wildfire followed by hail, extreme prolonged drought, or extreme defoliation by herbivores are all examples of these disturbances. The native warm-season grasses reestablish dominance within a few years of the event.

Pathway CP1.2-1.3
Community 1.2 to 1.3

A shift from the Wet Meadow to the At-Risk Phase occurs with continuous season-long grazing or haying, and inadequate recovery periods during the growing season.

Pathway CP 1.2-1.4
Community 1.2 to 1.4

Prolonged interruption of the natural disturbances of herbivory and fire will result in conversion from this community to the Excessive Litter Community.

Pathway CP 1.2-1.5
Community 1.2 to 1.5

A high-impact disturbance event or combination of events causing excessive defoliation of the vegetation, e.g., a growing season wildfire followed by a significant hailstorm, or a prolonged intensive grazing event, or long-term drought, etc.

Pathway CP 1.3-1.2
Community 1.3 to 1.2

Alter herbivory/haying regime to allow growing season rest of desirable species; return to normal precipitation regime.

Conservation practices

Prescribed Burning
Prescribed Grazing

Pathway CP 1.3-1.4
Community 1.3 to 1.4

Prolonged interruption of the natural disturbances of herbivory and fire will result in conversion from this community to the Excessive Litter Community.

Pathway CP 1.3-1.5
Community 1.3 to 1.5

A high-impact disturbance event, or combination of events causing excessive defoliation of the vegetation, e.g., a growing season wildfire followed by a significant hailstorm, a prolonged intensive grazing event, or long-term drought, etc.

Pathway CP 1.4-1.2
Community 1.4 to 1.2

Reintroduction of the natural processes of herbivory and fire will allow the vegetation to return to the previous community.

Conservation practices

Prescribed Burning
Prescribed Grazing

Pathway CP 1.4-1.3
Community 1.4 to 1.3

Reintroduction of the natural processes of herbivory and fire will allow the vegetation to return to the previous community.

Conservation practices

Prescribed Burning
Prescribed Grazing

Pathway CP 1.4-1.5
Community 1.4 to 1.5

A high-impact disturbance event, or combination of events causing excessive defoliation of the vegetation, e.g., a growing season wildfire followed by a significant hailstorm, or a prolonged intensive grazing event, or long-term drought, etc.

Pathway CP 1.5-1.2
Community 1.5 to 1.2

Restoration occurs naturally once the disturbance event has subsided. Allowing growing season rest will accelerate the recovery.

Conservation practices

Prescribed Grazing

Pathway CP 1.5-1.3
Community 1.5 to 1.3

Restoration occurs naturally once the disturbance event has subsided. Allowing growing season rest will accelerate the recovery.

Conservation practices

Prescribed Grazing

State 2
Degraded State

This state has been degraded from the Reference State and much of the native warm-season grass community has been replaced by less desirable plants. The loss of tall and mid- warm-season grasses has negatively impacted energy flow and nutrient cycling. A compaction layer may be present due to excessive livestock hoof action. Permanent alterations of the soil community and the hydrologic cycle make restoration to the original native Reference Community extremely difficult, if not impossible.

State 3
Sod-Busted State

This Reference State crosses a major ecological threshold and move into this state as a result of long-term management strategies that cause a major and almost irreversible shift in the species composition of the vegetative community.

Transition T1-2
State 1 to 2

Heavy grazing or haying without adequate recovery periods will cause this state to lose a significant proportion of tall and mid- warm-season grass species and cross a threshold to the Degraded State. Water infiltration and other hydrologic functions will be reduced due to the root-matting presence of sod-forming grasses. With the decline and loss of deeper-penetrating root systems, soil structure and biological integrity are catastrophically degraded to the point that recovery is unlikely. Once this occurs, it is highly unlikely that grazing management alone will return the community to the Reference State.

Transition T1-3
State 1 to 3

The Reference State is significantly altered by mechanical tillage to allow the site to be placed into production

agriculture. The disruption to the plant community, the soil, and the hydrology of the system make restoration to a true reference state unlikely.

Transition T2-3
State 2 to 3

The state is significantly altered by mechanical tillage to allow the site to be placed into production agriculture. The disruption to the plant community, the soil, and the hydrology of the system make restoration unlikely.

Additional community tables

Animal community

LIVESTOCK – GRAZING INTERPRETATIONS:
Grazing by domestic livestock, primarily cattle, is one of the primary uses of the native grasslands. During the dormant period, the protein levels of the forage may be lower than the minimum needed to meet livestock requirements. These sites are also hayed. Annual forage production of the Reference Community averages around 3,800 lbs./acre.

WILDLIFE INTERPRETATIONS:
Some of the Saline Subirrigated sites in Lancaster County, Nebraska are home to the only known population of the federally endangered Salt Creek Tiger beetle.

Major Land Resource Area (MLRA) 106 lies primarily within the tallgrass prairie ecosystem. Prior to European settlement, this area consisted of diverse grassland habitats interspersed with varying densities of depressional wetlands and limited woody riparian corridors. These habitats provided critical life cycle components for the grassland birds, prairie dogs, and herds of roaming bison, elk, and pronghorn that historically occupied this landscape. Diverse populations of small mammals and insects provided a bountiful prey base for raptors and omnivores such as coyotes, foxes, raccoons, and opossums. Native Americans, bobcats, wolves, and mountain lions occupied the apex predator niche. In addition, a wide variety of reptiles and amphibians thrived in this landscape.

The tallgrass prairie was a disturbance-driven ecosystem with fire, herbivory, and climate functioning as the primary disturbances. Following European settlement, elimination of fire, widespread conversion to cropland, and other sources of habitat fragmentation significantly altered the appearance and functionality of the entire ecosystem. The reduced stability of the system is reflected by major changes in the composition and abundance of the native flora and fauna. Introduced and invading species further degrade the ecological integrity of the plant and animal communities. Bison and prairie dogs were historically keystone species, but free-roaming bison herds and nearly all prairie dogs have been extirpated. The loss of bison and fire as ecological drivers greatly influenced the character of the remaining native grasslands and the habitats that they provide. Fragmentation has reduced habitat quality for numerous area-sensitive species, as highlighted by the decline of the greater prairie chicken. Many grassland-nesting bird populations, such as dickcissel and Henslow's sparrow, are also declining. In addition to free-ranging bison, extirpated species include pronghorn and wolves.

Historically, an ecological mosaic of the sites provided habitat for species requiring unfragmented grasslands. Important habitat features and components found commonly or exclusively on modern day remnants include upland nesting habitat for grassland birds and game birds; nesting and escape cover for waterfowl; forbs and insects for brood rearing habitat; and a forage source for small and large herbivores.

In this fragmented landscape, native grassland bird populations face increasing competition from the opportunistic European starlings and house sparrows, and are subject to nest parasitism from brown-headed cowbirds.

Tree encroachment creates habitat that favors generalist species such as American robin and mourning dove, and provides perches for raptors, increasing the predation mortality.

Introduced species such as smooth bromegrass, reed canarygrass, Kentucky bluegrass, nodding plumeless thistle, and Canada thistle further degrade the biological integrity of many of these remnant prairies.

1. REFERENCE STATE: The predominance of tall and mid-statured grasses plus a high diversity of forbs and shrubs in this community makes it ideal for grazers and mixed-feeders. Pollinating insects play a large role in maintaining the forb community, and provide a food source for grassland birds and other grassland-dependent species. The vegetative structural diversity provides habitat for reptiles, amphibians, and a wide array of native and introduced bird species. The abundant prey base supports populations of Swainson's hawk, burrowing, short-eared, and great horned owls, and other grassland raptors.

The diversity of grasses, forbs, and shrubs provide high nutrition levels for small and large herbivores including moles, mice, ground squirrels, and whitetail deer. The structure of this plant community provides suitable thermal, protective, and escape cover for small herbivores and grassland birds. Many wide-ranging predators utilize this plant community, including coyote, badger, red fox, and least- and long-tailed weasels.

As the plant community degrades to more mid-grasses and fewer tall grasses, less winter and escape cover are provided. It also provides less cover for predators. As the plant community shifts from tall warm-season grasses to mid-height grasses, it favors grassland birds that prefer shorter vegetation.

Hydrological functions

The deep, poorly and somewhat poorly drained soils of the Saline Subirrigated site place it in classes C and D of the hydrological rating scale. The proximity of groundwater to the rooting zone during the growing season provides an abundance of water for the vegetative community, but the degree of salinity in the soils restrict both the production and the species composition.

Recreational uses

This site provides hunting for upland game species and white-tailed deer, along with hiking, photography, and bird watching. The wide varieties of plants which bloom from spring until fall have an aesthetic value that appeals to visitors.

Wood products

Wood products from this site are negligible.

Other products

None of significance.

Other information

Site Development and Testing Plan:
Future work is needed to validate the information in this Provisional Ecological Site Description. Additional data collection and evaluation may also be needed to develop this ESD to the Approved, then Correlated level. This could include field activities to collect low-, medium-, and high-intensity sampling, soil correlations, and analysis of that data. Field reviews of the project plan should be done by soil scientists and vegetation specialists. A final field review, peer review, quality control, and quality assurance reviews of the ESD will be needed to produce the final document.

Inventory data references

Information presented here has been derived from field observations by trained and experienced range and soils personnel.

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Contributors

Doug Whisenhunt

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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:** None, no headcutting.

2. **Presence of water flow patterns:** Little, if any, soil deposition or erosion.

3. **Number and height of erosional pedestals or terracettes:** No erosional pedestals or terracing, some hummocking present.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 0% bare ground. The entire surface is covered.

5. **Number of gullies and erosion associated with gullies:** No gullies or erosion.

6. **Extent of wind scoured, blowouts and/or depositional areas:** No wind scoured blowouts or deposits.

7. **Amount of litter movement (describe size and distance expected to travel):** No evidence of litter movement.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil surface stability is 6. No structural degradation with water immersion.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Five percent surface organic matter, the color is 2-1, the structure is strong and granular.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** There is no negative effect on water infiltration and/or runoff due to plant composition or distribution. Plant composition and distribution are adequate to prevent any rill formation and/or pedastalling. Inter-spacial distribution is consistent with expectation for the site.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None, but hummocking is present due to soil saturation.

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: Warm season grasses: Inland saltgrass> prairie cordgrass

    Sub-dominant: Cool Season: Slender wheatgrass= western wheatgrass=foxtail barley

    Other: Heath aster, curly dock, begarstick, sea-blight, saltwort

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** The majority of plants are alive and vigorous. Some mortality and decadence is expected for the site. This in part is due to drought, unexpected wildfire or a combination of the two events. This would be expected for both dominant and sub-dominant groups.

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14. **Average percent litter cover (%) and depth (in):** Plant litter is distributed evenly throughout the site. There is no restriction to plant regeneration due to depth of litter. When prescribed burning is practiced there will be little litter the first half of the growing season.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 3850 lbs. Vegetative production is 95-100% of normal based upon the range site description. (refer to ecological site description for favorable or unfavorable growing conditions)

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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:** There are no noxious weeds present. Invasive plants make up a small percentage of plant community, and invasive brush species are < 5% canopy.

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17. **Perennial plant reproductive capability:** Plants on site exhibit the required vigor and growth to be able to reproduce vegetatively or by seed.
