The New and Improved Closed Upland Depression ESD

What is an Ecological Site Description and How it Used?

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Closed Upland Depression ESD

- What is an Ecological Site?
- How are Ecological Sites Classified and Organized?
  - Major Land Resource Areas
  - Ecological Site Concepts
  - Ecological Site Keys
- What is an Ecological Site Description?
- Closed Upland Depression Ecological Site Description for the Rain Water Basin
  - Site Concepts
  - Physical Features
    - Physiographic Features
    - Water Features
    - Soil Features
  - Ecological Dynamics
    - State and Transition Model
    - States & Communities
    - Community Pathways and Transitions
What Is an Ecological Site?

A distinctive kind of land that:

- Specific geophysical attributes
  - Soils (texture, depth, horizon development, chemistry, water holding capacity)
  - Water Features (flooding, ponding, water table)
  - Aspect, slope and topography
  - Parent material
- Differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation
- Differs from other kinds of land in its response to management actions and natural disturbances.

Ecological Sites are classified on a Major Land Resource Area basis.
An Ecological Site:

- Is a division of the landscape, a classification analogous to species.
- Has specific capabilities and capacities
- Changes over time; distinguished by speed of change and vulnerability to changes
- Is grouped and described by Major land Resource Area
- Described by an ecological site description, which pulls together the unique information about the site in a written document.
  - Describes how an ecological site is different from others.
What is a MLRA?

Part of the land use hierarchy.
Geographically associated land resource units featuring a particular pattern of soils, water, climate, vegetation, land use and type of farming.
Nebraska MLRA’s

13 MLRA’s in Nebraska
Each characterized by a specific landscape
MLRA’s in Nebraska
MLRA 65 Nebraska Sandhills
MLRA’s in Nebraska – MLRA 67A Central High Plains North
Nebraska MLRA’s -
MLRA 75 Central Loess Plains

Central Loess Plains

- Gently rolling plains.
- Numerous narrow, shallow stream valleys and broad river valley with a number of stream terraces.
- The soils are deep, silty soils formed in loess.
- Dominant soil order is Mollisols.
- Mesic Temperature regime.
- Precipitation ranges from 23-36”
- Vegetation consists of tall and mid-grasses
- Elevation ranges from 1,100’-3,000 above sea level
- Local relief is 10-25’.
Ecological Site Key
Why Split Ecological Sites on MLRA Boundaries?

CLOSED UPLAND DEPRESSION – MLRA 72
Why Split Ecological Sites on MLRA Boundaries?

CLOSED UPLAND DEPRESSION – MLRA 75
Ecological Site Description

• A report that provides detailed information about a particular kind of land or distinctive ecological site.

• Four major sections:
  • Site Characteristics-physiographic, climate, soil, water
  • Plant Communities-plant species, vegetation states, ecological dynamics
  • Site Interpretations-management alternatives for the site
  • Supporting Information-literature and data sources
Ecological Site Descriptions - Levels

• Provisional – Grouping of soil units that respond similarly to ecological processes. Has a state-and-transition model that captures the ecological processes and vegetative states and community phases.

• Approved – Fully describes the distinguishing features of the site. The reference state communities are described AND plant composition tables have been developed for each plant community in the reference state.

• Correlated – Highest level of documentation. Plant community tables have been developed for every state and plant community.
CLOSED UPLAND DEPRESSION ESD – MLRA 75
Deep Dive into the CUD ESD

• General MLRA Information
• Ecological Site Concept
• Physiographic Features
• Climatic Features
• Influencing Water Features
• Representative Soils Features
Ecological Site Concept

• Playa wetlands, embedded in upland portion of landscape, no natural outlet.
• Not connected to any drainage.
• Temporary, seasonal, or semi-permanent water regimes
• Ponded for weeks or months annually.
• Can remain ponded or dry for extended periods of more than a year.
• Species composition driven by depth and length of inundation and level of disturbance.
Physiographic Features

• Sites occur in playas and depressions of uplands
• Receive runoff from areas higher on the landscape
• Ponded for brief to long periods from run-in water
• Not subject to flooding
• Slopes 0-2%
CLIMATIC FEATURES

• Regime of extremes – hot in summer, cold in winter
• Winters can be open with bare ground most of the season or closed with up to several feet of snow persisting through spring
• Frost-free period ranges from 155-178
• Average Annual Precipitation is 29.36
• May, June and July are the wettest months
• Average high temperatures range from 36.2 in January to 87.89 in July
• Average low temperatures range from 14.1 in January to 64.7 in July
Influencing Water Features

- Temporary, seasonal or semi-permanently ponded
- Fill as a result of runoff or snow melt or precipitation events
- Independent of ground water influence
- Hydroperiod depends on sized of drainage area, infiltration rate, type and amount of vegetative cover, rainfall (intensity, frequency, amount)
- Depth of depression
- Hydroperiod can change annually.