

A photograph of a forest with many trees and a fallen log on the ground. The trees are mostly thin and have green leaves, suggesting a deciduous forest in spring or summer. The ground is covered with brown leaves and some green grass. A large, dark, fallen log lies in the foreground on the left side.

# Missouri Conservation Planning Course

## *Ecological Site Descriptions*

*Fred Young and Doug Wallace*

*NRCS State Office*

*Module 2B - 2013*



# PRESENTATION TOPICS

---

- ✘ What is an Ecological Site (ES)
- ✘ ES examples
- ✘ What is an Ecological Site Description (ESD)
- ✘ Missouri ES development project
- ✘ ESDs and land management



animal, plant, or mineral

# WHAT IS AN ECOLOGICAL SITE?

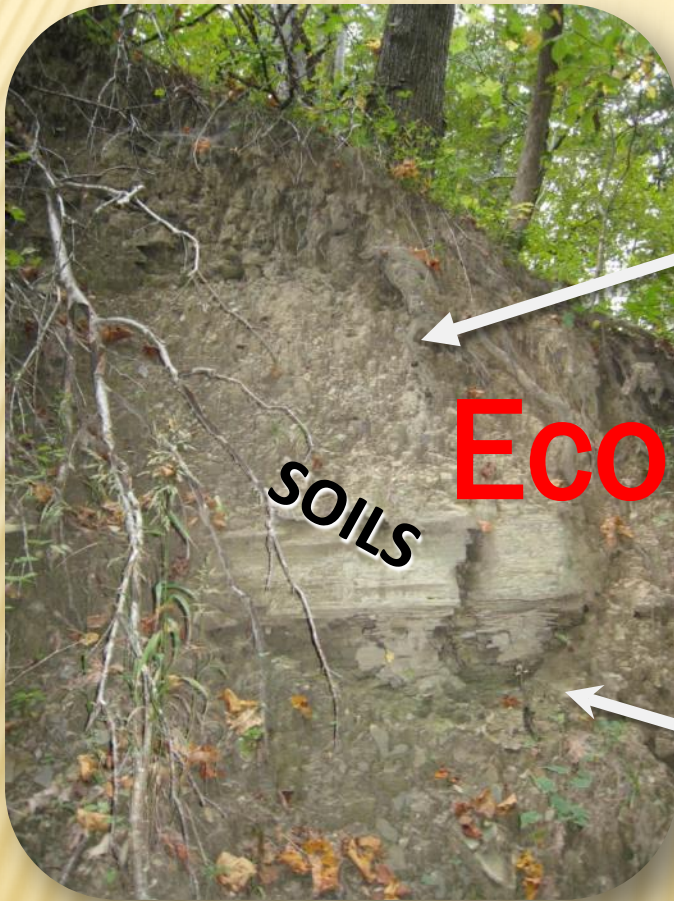
Looking across any  
landscape it's not  
difficult to recognize  
that ...



many acres are  
different from other  
acres - in the kinds and  
amount of vegetation,  
landform, and geology



# BASIS OF AN ES



## Ecological Site



how it's being done in Missouri

# **ECOLOGICAL SITE PROCEDURES**

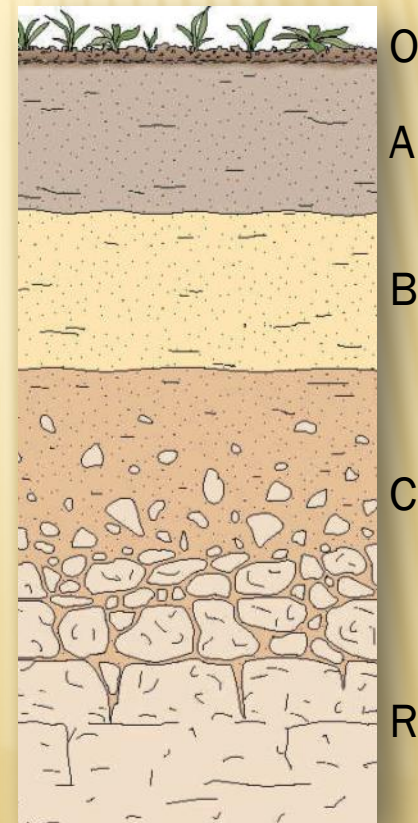
# ES PROCEDURES

- ✘ ESs are tied to USDA Major Land Resource Areas (MLRA)



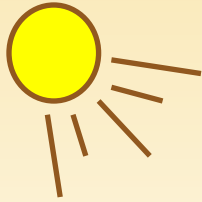
# MISSOURI FRAMEWORK FOR ECOLOGICAL SITES

- Statewide, we have identified 8 essential properties that have significant influence on vegetation and site productivity:
  - ✗ Landform
  - ✗ Parent material
  - ✗ Root restriction
  - ✗ Base saturation
  - ✗ Drainage
  - ✗ Texture
  - ✗ Flooding
  - ✗ Ponding

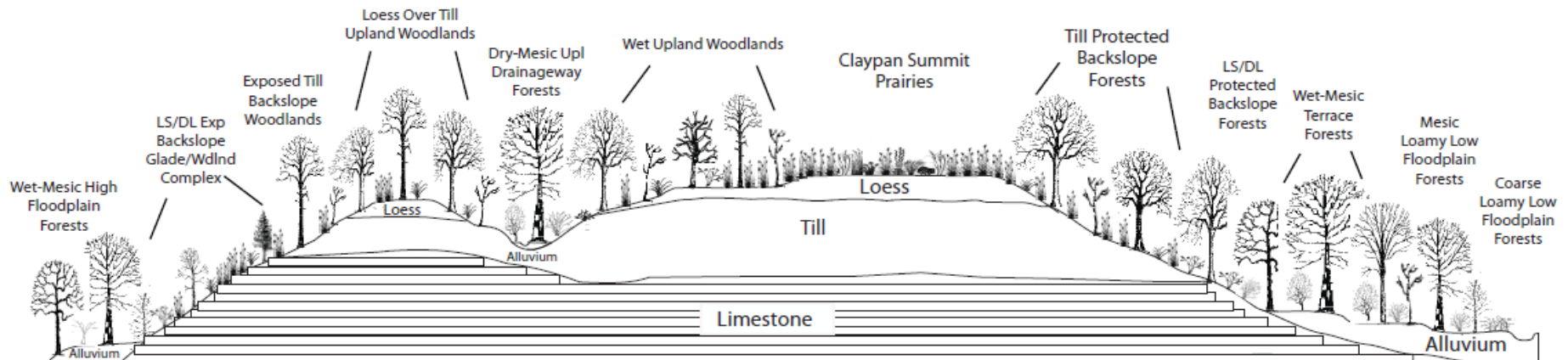




# GENERAL PROCEDURES - EXAMPLE



- 1) **LANDFORMS** are identified within a given landscape.
- 2) **PARENT MATERIALS** are then used to further subdivide landforms.
- 3) **SOIL PROPERTIES** are then used to further subdivide landform/parent material groups



- 4) Potential natural communities are then tied to each land unit, resulting in **ECOLOGICAL SITES**

# ES NAMING PROCEDURES

**Soil/Substrate + Landform + Plant Community**





# ES NAMING EXAMPLES

---

- ✘ Alfic Chert Exposed Backslope Woodland
- ✘ Alfic Chert Protected Backslope Forest
- ✘ Alfic Chert Upland Woodland
- ✘ Chert Upland Prairie
- ✘ Loess Fragipan Upland Flatwoods
- ✘ Loamy Floodplain Riverfront Forest
- ✘ Mollic Loess Upland Prairie
- ✘ Shallow Sandstone Upland Glade/Woodland
- ✘ Swamp
- ✘ Ultic Chert Upland Pinery Woodland
- ✘ Wet Sinkhole



what do they look like?

# **ECOLOGICAL SITE EXAMPLES**

---

# SHALLOW SANDSTONE UPLAND GLADE/WOODLAND

MLRA: 116A, 116B

Soil Series: Ramsey, Basehor

Parent Material: loamy colluvium and sandstone residuum

Landform: upland complex; <15% slope

Restriction: 0"-20" to sandstone bedrock

Base Saturation: very low

Drainage: somewhat excessively well-drained

Vegetation:

- Glade and woodland complex
- Acid glade species and some sandstone specialists
- Blackjack oak, post oak, shortleaf pine
- Very low site productivity



# ALFIC CHERT PROTECTED BACKSLOPE FOREST



MLRA: 116A, 116B, 115B, 115C, 134

Soil Series: Goss, Rueter, Alred, Beemont, Gepp, Mano, Hailey

Parent Material: cherty residuum

Landform: protected; > 15% slope

Restriction: none, deep to very deep

Base Saturation: moderate to high

Drainage: Well-drained

Vegetation:

- Mesic and dry-mesic forest indicators
- Generalists common
- White oak, Northern red oak overstory
- Medium-high site productivity

# MOLLIC LOESS UPLAND PRAIRIE



MLRA: 109, 113

Soil Series: Grundy, Sharpsburg,  
Lagonda, Greenton, Ladoga, Pershing,  
Leonard

Parent Material: loess

Landform: upland complex; <15% slope

Restriction: none

Base Saturation: high

Drainage: Moderately well-drained

Vegetation

- Prairie
- Big bluestem, Indian grass, little bluestem, prairie coneflower, lead plant, prairie willow
- High site productivity



soil features, ecological dynamics, wildlife interpretations

# WHAT IS AN ECOLOGICAL SITE DESCRIPTION?



# ECOLOGICAL SITE DESCRIPTION

*ESDs are reports that describe the various properties of*

*ecological sites*

*refer to the*

*historical and*

*ecological*

*properties and other interpretations*

## Ecological Site Description

### Chert Limestone/Dolomite Upland Woodland

F116AY015MO

- (*Quercus stellata* - *Quercus marilandica* // *Schizachyrium scoparium*)
- (post oak-blackjack oak/ /little bluestem)

An Ecological Site Description (ESD) is a reference document of ecological knowledge regarding a particular land area (ecological site). An ESD describes ecological potential and ecosystem dynamics of land areas and their potential management. Ecological sites are linked to soil survey map unit components, which allows for mapping of ecological sites. (NOTE: This is a "summary" ESD, and is subject to change. It contains basic ecological information sufficient for additional information is developed available via the Web Soil Survey

United States Department of Agriculture  
Natural Resources Conservation Service

Plants | ESIS | ESD | FSGD | ESI Forestland | ESI Rangeland | ESIS User Guide

**Quick Access**

- > PLANTS
- > Plant Materials
- > ESIS
- > ESD Home
- > FSGD
- > ESI-Forestland
- > ESI-Rangeland

United States Department of Agriculture Natural Resources Conservation Service

## Ecological Site Information System

The Ecological Site Information System (ESIS) is the repository for the data associated with the collection of forestland and rangeland plot data and the development of ecological site descriptions. ESIS is organized into two applications and associated databases:

the Salem Plateau of the Ozark escarpment, to the west, adjacent to the Burlington Plateau. The underlying horizontally bedded Ordovician-aged dolomites that dip gently away from the Missouri. Cambrian dolomites are dissected hillslopes. In some places, Mississippian sediments overlie the dolomite. From the gently rolling central dissected hillslopes associated with the Current and Elevenpoint Rivers.

Chert Upland Woodlands (green areas) are found in the dissected hills of the Ozark Plateau, primarily over the Ordovician-aged dolomite over limestone/dolomite

slopes of 1 to 15%. The site generates runoff to adjacent, downslope ecological sites. This site does not flood.

### Soil Features

These soils are underlain with limestone and/or dolomite bedrock at 20 to 60 inches deep. The soils were formed under woodland vegetation, and have thin, light-colored surface horizons. Parent material is slope alluvium over residuum weathered from limestone and dolomite, overlying limestone or dolomite bedrock. They have gravelly to very gravelly and cobbly silt loam surface

# ECOLOGICAL SITE DESCRIPTION

- × *PHYSIOGRAPHIC FEATURES*
- × *SOIL FEATURES*
- × *ECOLOGICAL DYNAMICS*
- × *PLANT COMMUNITIES*
- × *ANIMAL COMMUNITIES*
- × CLIMATE FEATURES
- × WATER FEATURES
- × SITE INTERPRETATIONS
- × SUPPORTING INFORMATION





who, what, where, and when

# MISSOURI ECOLOGICAL SITE PROJECT

# WHO IS INVOLVED?

**MDC**



- ✘ Tom Nichols
- ✘ Keri Teal
- ✘ Stribling Stuber
- ✘ Mike Leahy
- ✘ Lisa Potter

**NRCS**



- ✘ Fred Young
- ✘ Doug Wallace
- ✘ Nate Goodrich
- ✘ Mark Kennedy
- ✘ Chris Hamilton

**UMC**



- ✘ Tim Nigh
- ✘ Dave Hammer
- FS**
- ✘ John Kabrick



**DNR**



- ✘ Dennis Meinert

**FWS**

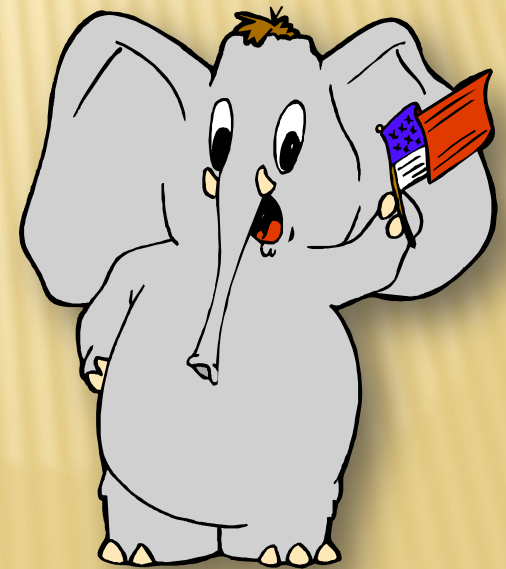


- ✘ Kelly Srigley-Werner



# ESDS FOR MISSOURI: *HOW DO YOU EAT AN ELEPHANT?*

- ✘ A fully completed ESD can run 30–60 pages
- ✘ We have identified over 290 ecological sites in Missouri
- ✘ Complete all ESDs by...2020? Ever?
- ✘ How can we use ES/ESDs for conservation planning if we won't have nationally approved ESDs?



# OUR SOLUTION: A *PHASED* APPROACH

## ✘ *Soil – ES correlations*

- + A statewide legend connecting each soil component to an ecological site
- + Create the soil-ES structure, statewide

## ✘ *Provisional ESDs* (6-10 pages)

- + Lean document
- + Just enough for basic conservation planning and resource management

## ✘ *Draft ESDs* (12-20 pages)

- + Provisional plus in-depth information on ecological dynamics, wildlife and vegetation communities

## ✘ *Correlated ESDs* (30-50 pages)

- + Fully completed robust document per national policy





# ESD PROJECT TIMELINE

Item	Target	
ES update to field offices (webinars; Area meetings)	April 2012	completed
Statewide soil-ES legend	April 2013	completed
Provisional ESDs complete statewide (phase 1)	May 2013	completed
Provisional ESDs available for conservation planning (in FOTG)	June 2013	completed
Incorporation of ES into conservation planning specifications	2013	started
Training for agency conservationists	July 2013 – Oct 2013	
Draft ESDs (phase 2)	2014	
Correlated ESDs (phase 3)	first ones in late 2013	



things you can use

# PRODUCTS

---



# PRODUCTS

1. Description of each ESD using NRCS format, which includes:
  - Physiographic, soil narrative
  - Map of ESD extent
  - Plant lists
  - Ecological dynamics of site
  - *State and Transition Diagram*
  - *Photos of reference communities and degraded states*
  - *Management criteria and guidelines*

The screenshot displays the NRCS Sharepoint Site interface. The top navigation bar includes the NRCS logo, the text 'Soils', and a user welcome message: 'Welcome Young, Fred - NRCS, Columbia, MO'. Below the navigation bar, the breadcrumb path is 'Missouri NRCS SharePoint > Soils > Soil Resource Information'. The main content area shows a table of documents with the following data:

Type	Name	Modified	Modified By
Folder	Areas of Responsibility	4/1/2011 1:19 PM	Gruber, David - NRCS, Columbia, MO
Folder	<b>Ecological Site Descriptions</b>	3/6/2012 8:16 AM	Gruber, David - NRCS, Columbia, MO
Folder	ForageData	3/31/2011 11:52 AM	Gruber, David - NRCS, Columbia, MO
Folder	Productivity Index	3/31/2011 11:55 AM	Gruber, David - NRCS, Columbia, MO

The 'Ecological Site Descriptions' folder name is circled in red. The interface also shows a 'View: All Documents' dropdown menu and a left-hand navigation pane with options like 'View All Site Content', 'Documents', and 'Lists'.

# PRODUCTS

## 2. FOTG postings of Missouri ESDs

United States Department of Agriculture  
NRCS Natural Resources Conservation Service

CHARITON COUNTY, MO  
a component of SmartTech  
Field Office Technical Guide

May 22 | Wed | Close | Preferences | Contact | Help | Login

Refresh Menu

**FOTG**

- Section II
- Table Of Contents
- County Soil Information
- Statewide Soil and Site Information
- County Soil Survey-Official
- Copy
- Climatic Data
- Cultural Resources Information
- Threatened and Endangered Species
- Ecological Site Information**
- Environmental Resource Information

**FOTG Home Page**

**What is FOTG?**  
Technical guides are the primary scientific references for NRCS. They contain technical information about the conservation of soil, water, air, and related plant and animal resources. [...more](#)

For additional information and requirements please contact your local [USDA Service Center](#).

**What's in FOTG?**

- Section I -General References
- Section II -Natural Resources Information
- Section III -Conservation Management Systems
- Section IV -Practice Standards and Specifications
- Section V -Conservation Effects [...more](#)

**In The Spotlight**

**Tools**

**Technical Materials**

**What's Changed Recently**

- [Edge of Field Water Quality Monitoring System Installation Conservation Activity \(202\) \(5/15/2013\)](#)
- [New Edge of Field Water Quality Monitoring System Installation Conservation Activity \(202\)](#)
- [Edge of Field Water Quality Monitoring Data Collection and Evaluation Conservation Activity \(201\) \(5/15/2013\)](#)
- [New Edge of Field Water Quality Monitoring Data Collection and Evaluation Conservation Activity \(201\)](#)
- [Irrigation Land Leveling \(464\) Standard \(5/15/2013\)](#)
- [Updated Irrigation Land Leveling \(464\) Standard](#)
- [202\\_EdgeofFieldWaterQualityMonitoringInstallation\\_FY13 \(5/14/2013\)](#)
- [201\\_EdgeofFieldWaterQualityMonitoringDataCollection\\_FY13 \(5/14/2013\)](#)
- [MO Seeding Calculator \(5/14/2013\)](#)
- [Updated MO Seeding Calculator](#)

[...more \(Last 30 days\)](#)

Draft FOTG

NRCS | USDA | [Accessibility Statement](#) | [USDA Privacy Policy](#) | [USDA Nondiscrimination Statement](#) | [FOIA](#)

# PRODUCTS

## 3. Web Soil Survey - ES Mapping

The screenshot displays the USDA Web Soil Survey interface. At the top, the USDA logo and "Natural Resources Conservation Service" are visible. The main navigation bar includes links for "Contact Us", "Download Soils Data", "Archived Soil Surveys", "Soil Survey Status", "Glossary", "Preferences", "Link", "Logout", and "Help". Below this, there are tabs for "Area of Interest (AOI)", "Soil Map", "Soil Data Explorer", and "Shopping Cart (Free)". The "Soil Data Explorer" tab is active, showing a dropdown menu for "View Soil Information By Use" set to "All Uses".

The interface is divided into several sections:

- Search:** A search bar and a "Legend" button.
- Ecological Sites:** A section with "Open All" and "Close All" buttons, and a "View All Ecological Sites Info" link.
- View Options:** A section with checkboxes for "Dominant Ecological Site Map" (checked) and "Ecological Sites by Map Unit Component Table" (checked).
- Basic Options:** A section with a dropdown for "Ecological Site Rangeland Type" and a "View All Ecological Sites Info" link.

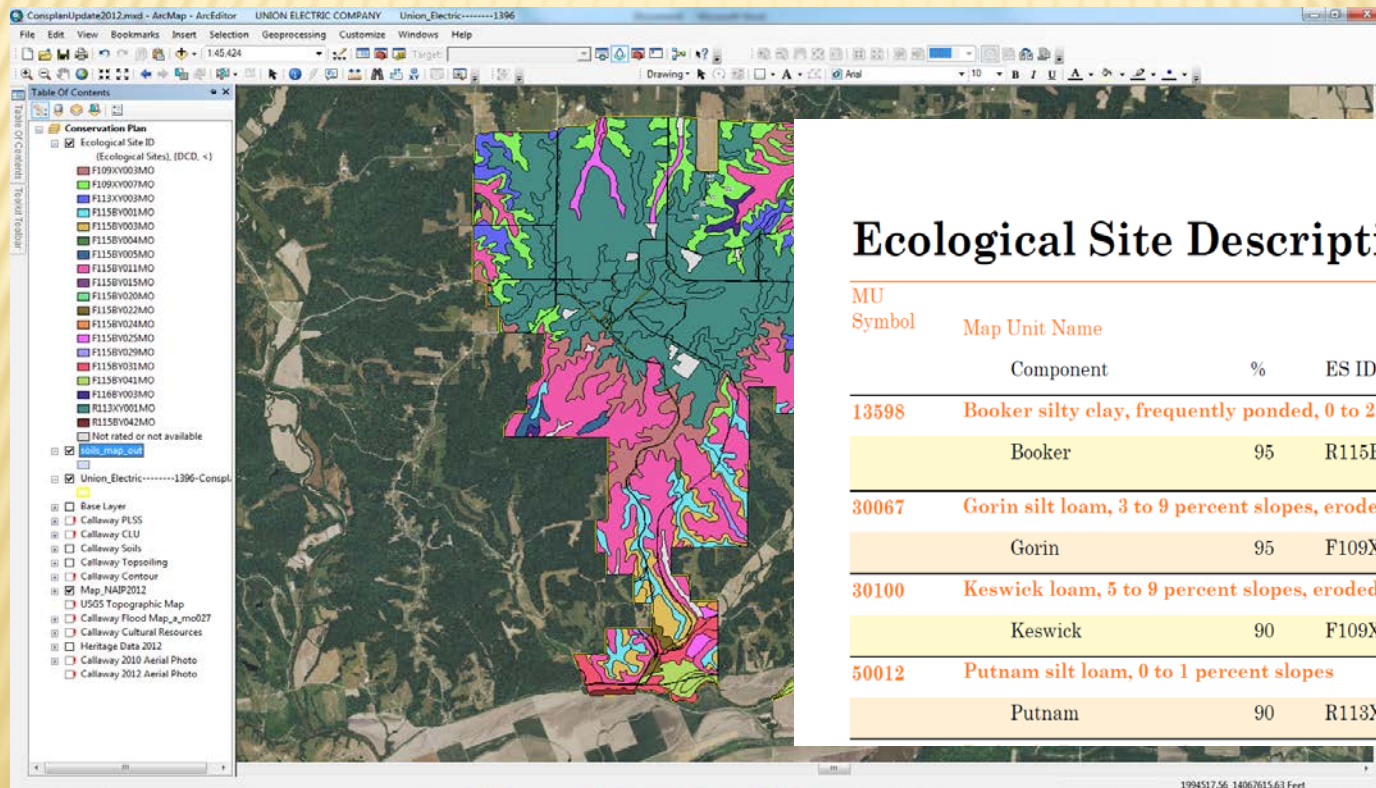
The main map area, titled "Map - Dominant Ecological Site - Rangeland", shows an aerial view of a field with overlaid soil map units. The map units are color-coded: brown (R109XY006MO), green (R113XY001MO), and purple (R113XY002MO). The map includes a scale bar (0 to 1070ft) and a warning at the bottom: "Warning: Soil Ratings Map may not be valid at this scale."

Soil Map Unit	Description
R109XY006MO	Till Upland Prairies And Savannas
R113XY001MO	Claypan Summit Prairies And Savannas
R113XY002MO	Loess Upland Prairies And Savannas

# PRODUCTS

## 4. Toolkit map and legend, which includes:

- Ecological site map
- Ecological site legend



## Ecological Site Descriptions

MU Symbol	Map Unit Name	Component	%	ES ID	Description
13598	Booker silty clay, frequently ponded, 0 to 2 percent slopes, occasionally flooded	Booker	95	R115BY042MO	Ponded Floodplain Depression Prairie and Marsh
30067	Gorin silt loam, 3 to 9 percent slopes, eroded	Gorin	95	F109XY003MO	Alfic Loess Upland Woodland
30100	Keswick loam, 5 to 9 percent slopes, eroded	Keswick	90	F109XY007MO	Alfic Till Upland Woodland
50012	Putnam silt loam, 0 to 1 percent slopes	Putnam	90	R113XY001MO	Mollic Claypan Summit Prairie



what's in it for Missouri?

# ESD IMPACTS

---

# ESD IMPACTS

- ✘ Improved program support (*CRP, EQIP, CSP, WRP*)
- ✘ Enhanced application/natural community development (e.g. *643, 657, CP25, CP38, ANM21*)
- ✘ Improved planning and resource management
- ✘ Enhanced inter-agency coordination/cooperation





# SUMMARY

---

- ✘ ***Multi-agency team*** effort that includes NRCS, MDC, DNR, UMC, FWS, FS
- ✘ ***ES/ESDs*** are tied to soil map unit components in NASIS
- ✘ ***Phase I*** information will be posted on NRCS Sharepoint/FOTG
- ✘ ***ES*** are now a mapping function in Web Soil Survey
- ✘ ***ESDs*** will support conservation planning, land management, practice application, and conservation programs





# The End

Questions?

Thoughts?

Feelings?

Regrets?

