

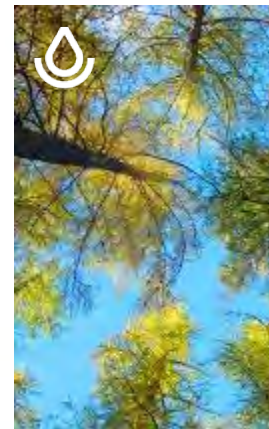


United States Department of Agriculture

September 2021



Natural  
Resources  
Conservation  
Service



## Current Projects to Improve Grazing Land Assessments and Planning

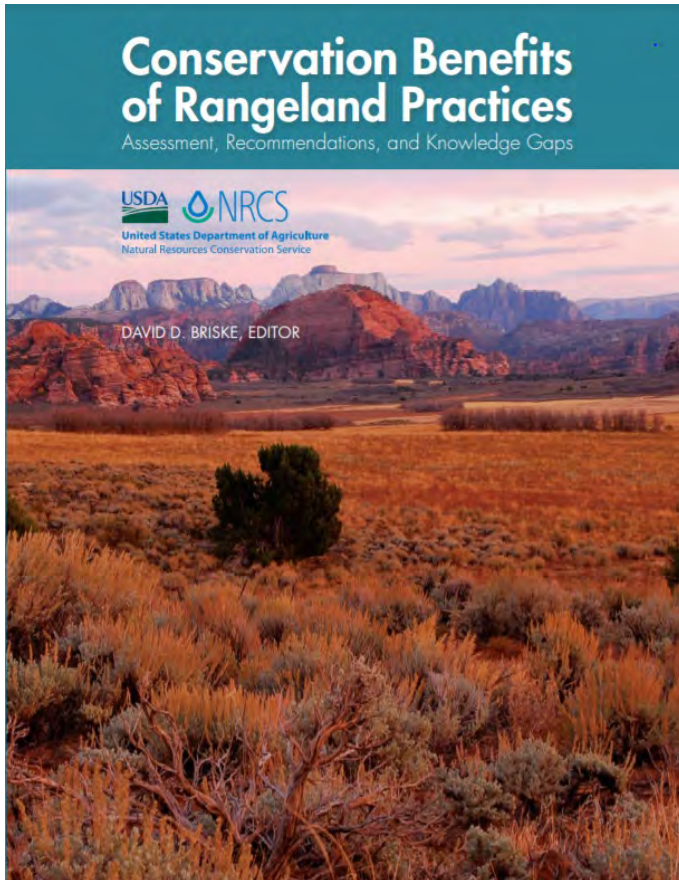
*Loretta (Lori) Metz, CEAP-Grazing Land Component Leader*  
*Loretta.Metz@usda.gov*

Natural  
Resources  
Conservation  
Service

[nrcs.usda.gov/](https://nrcs.usda.gov/)



# Literature Synthesis, 2011



- Alignment of Practice Purpose statements with Science?
  - Prescribed Grazing
  - Prescribed Burning
  - Brush Management
  - Range Planting
  - Riparian Herbaceous Cover
  - Upland Wildlife Habitat Management
  - Herbaceous Weed Control
- Findings:
  - Broadly supports many NRCS purpose statements.
  - Unable to determine magnitude or trend of conservation benefits.
  - More long-term studies needed.

“This synthesis provides a foundation upon which the next generation of rangeland conservation practice standards can be designed and implemented.”







# CORE – Conservation Outcomes Research Explorer

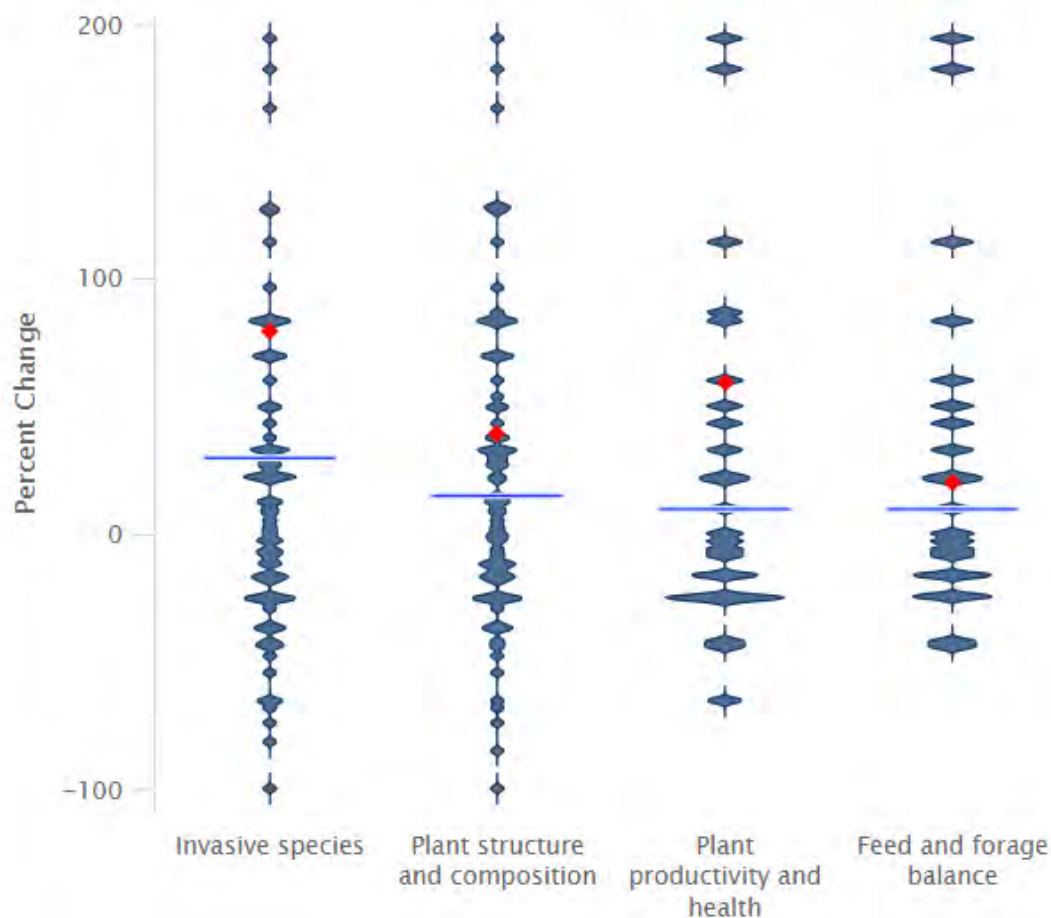
- Query research findings that have been linked to:
  - Resource Concern Categories
  - Conservation Practices
- Provides:
  - Annual Percent-Change Rates extracted from research studies.
  - Probabilities and Uncertainty of conservation treatments.
  - Plots of research results vs. NRCS Practice Points and CPPE values.
- Can be used for:
  - CEAP for assessments and ecosystem service valuation work.
  - Updating practice standards.
  - Target the most effective treatment types.
  - Capture probable direction and magnitude of change.
  - Bunches of stuff!



# CORE – Conservation Outcomes Research Explorer



Average Annual Percent Change from Herbaceous Weed Treatment on Resource Concerns

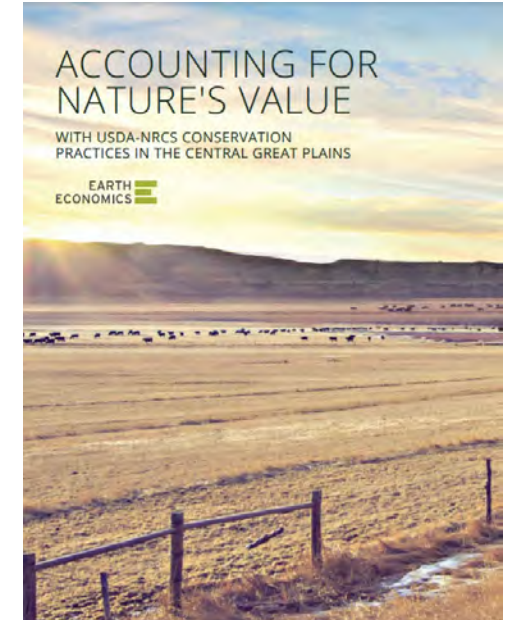
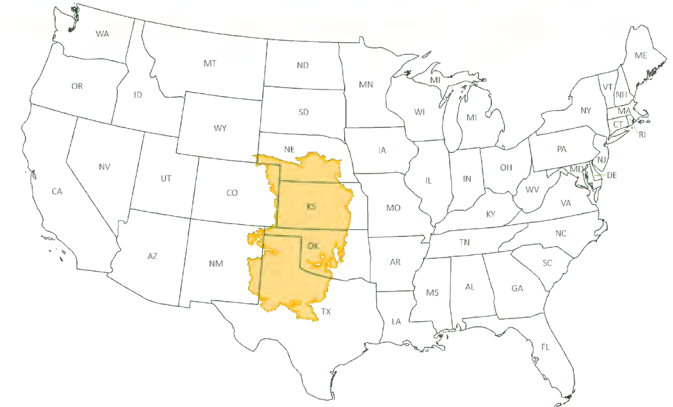


Draft; Subject to Change

# Ecosystem Service Valuation on Rangelands

**TABLE 9. ECOSYSTEM SERVICE AND GENERAL LANDCOVER COMBINATIONS VALUED IN THE STUDY AREA**

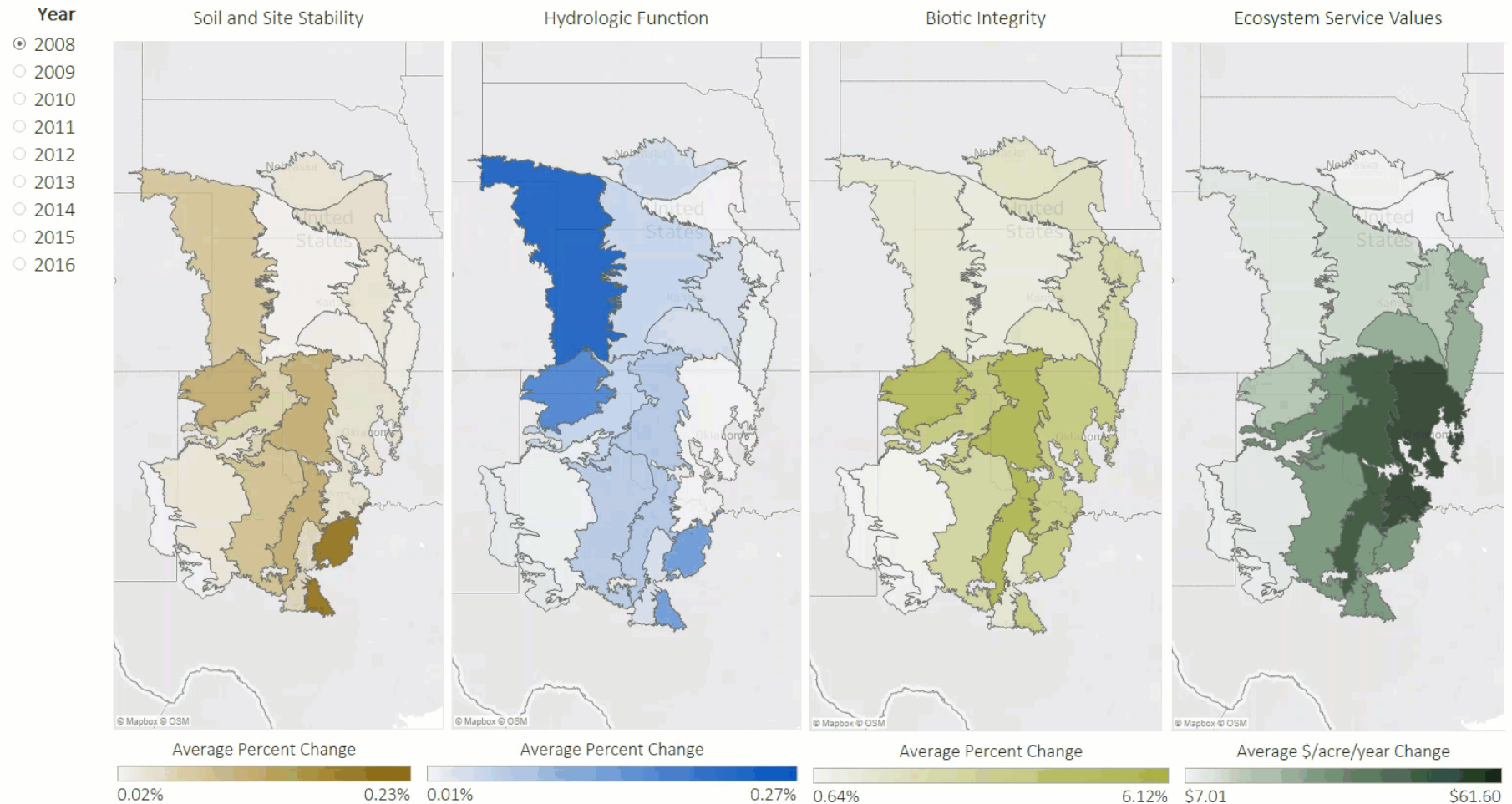
ECOSYSTEM SERVICES VALUED IN THIS STUDY	GRASSLAND	SHRUBLAND	WETLAND
Aesthetic Information	•		
Air Quality	•	•	
Biological Control	•		
Climate Stability	•	•	•
Disaster Risk Reduction	•		•
Habitat	•		•
Recreation & Tourism	•	•	•
Soil Retention	•		•
Soil Quality			•
Water Capture, Conveyance, & Supply			•
Water Quality	•		•
Water Storage			•



52-page electronic report

# Ecosystem Service Valuation on Rangelands

## Change in Ecosystem Service Metrics Due to Rangeland Management Practices







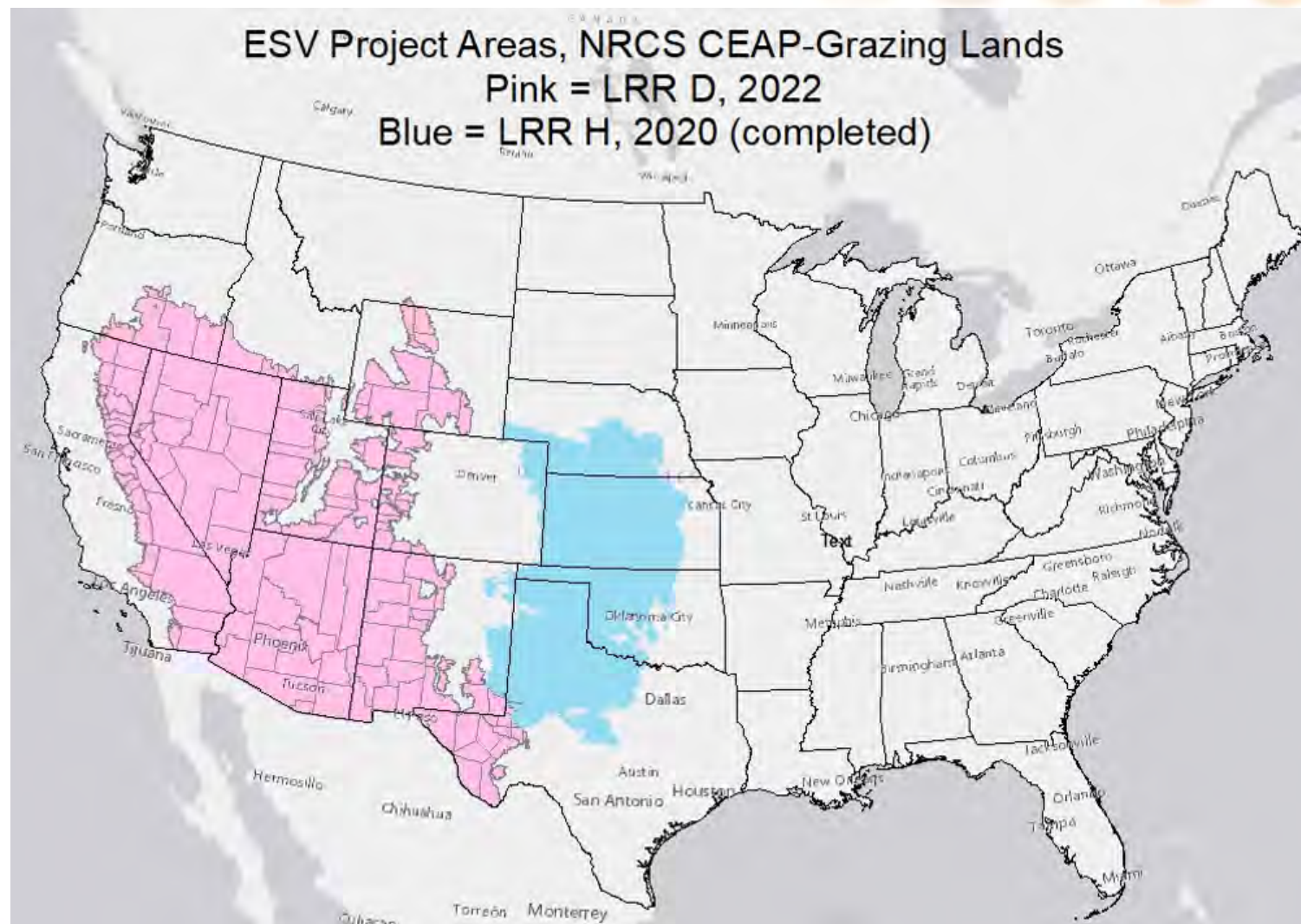
# Ecosystem Service Valuation on Rangelands

Implementing this framework, we estimated that between 2008 and 2016, Brush Management and Prescribed Grazing on private rangelands in Land Resource Region H (LRR H, the Central Great Plains Winter Wheat and Range Region) increased the value of selected ecosystem services by a total between \$15 million and \$33 million, averaging \$1.7 to \$3.5 million per year. **That represents an average increase of \$2.28 to \$4.93 per acre per year of ecosystem services from baseline estimates prior to when those practices were applied.**

The ecosystem services that contributed most to the total value include: air quality (35%); water quality (19%); climate stability (12%); disaster risk reduction (10%); recreation and tourism (7%); water capture, conveyance and supply (7%); soil retention (4%); habitat (3%); and aesthetics (3%).



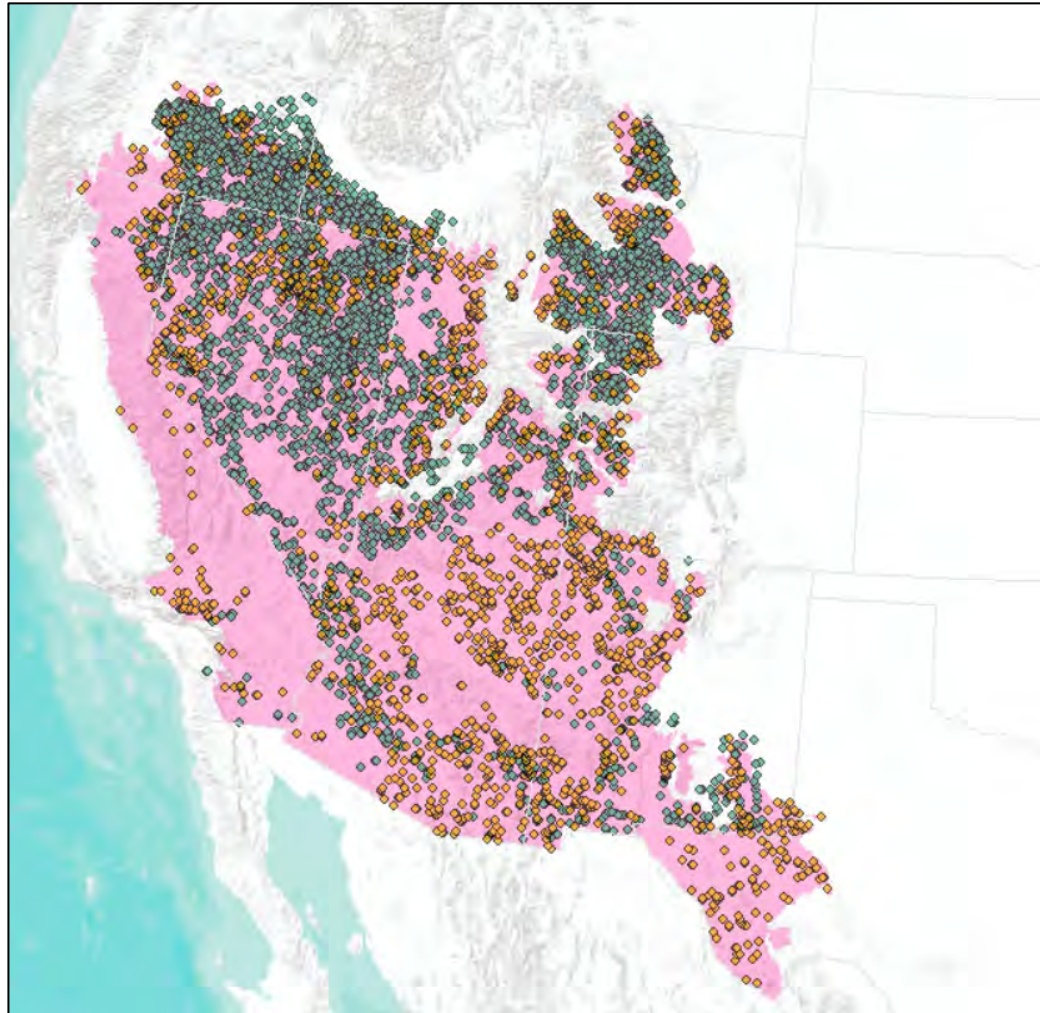
# Ecosystem Service Valuation on Rangelands







# Ecosystem Service Valuation on Rangelands



Orange dots are NRI on non-federal rangeland.

Green dots are BLM on their rangeland.

156% more data points with BLM included.

Average of \$171 million/year EQIP spent on federal lands.





# Tools for Grazing Land Users







## rSVI – rangeland Soil Vulnerability Index

*rSVI (water)*

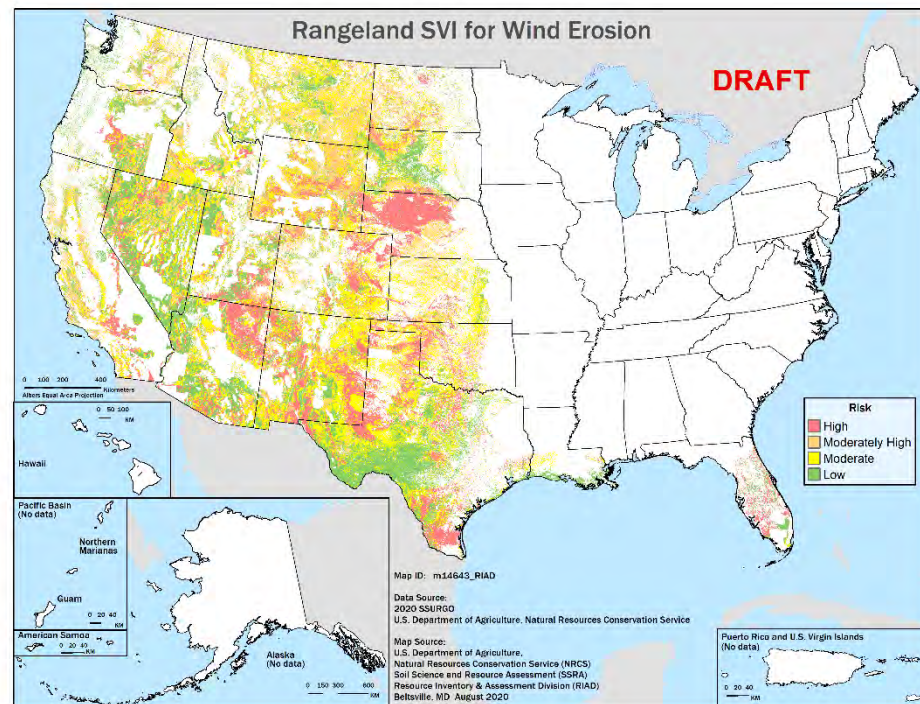
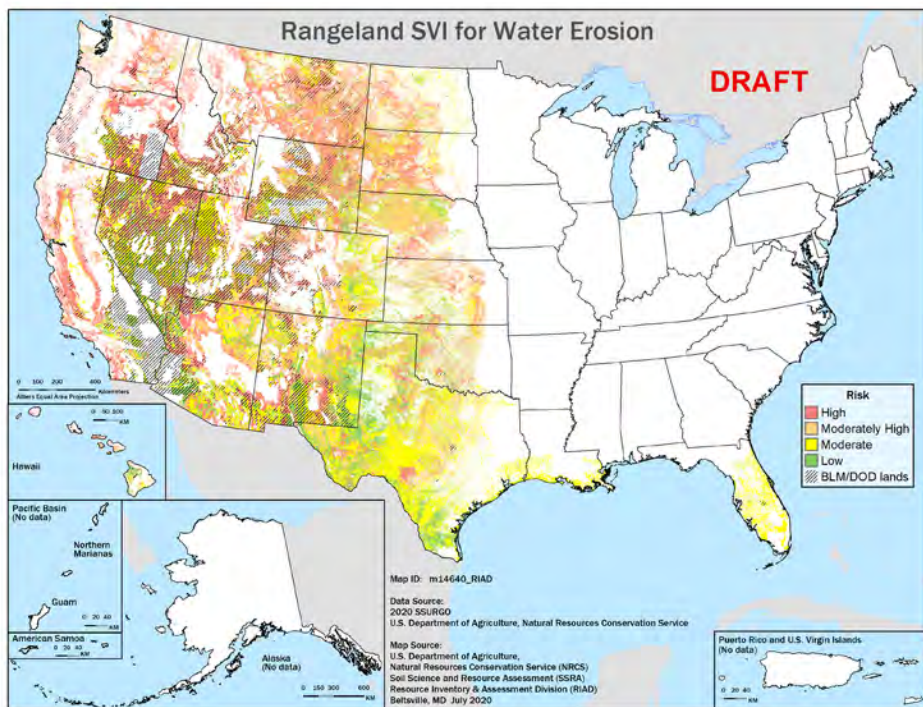
*rSVI (wind)*

- Conservation planning layer to identify risk potentials for water and wind erosion on rangelands. Bare soil analysis (100% bareground).
- Uses official soil data from NRCS, RHEM (Rangeland Hydrology and Erosion Model) water erosion model runs, and wind erosion modeling with the Aeolian Erosion (AERO) model.
- Key soil properties used to determine soil vulnerability:
  - Surface Texture, both mineral and organic
  - Percent Slope
  - Percent Surface Rock Cover
- Integrated into planning and assessment tools such as CART to help identify vulnerable rangeland soils for more targeted and effective conservation delivery.



# rSVI – rangeland Soil Vulnerability Index

*rSVI (water)*  
*rSVI (wind)*





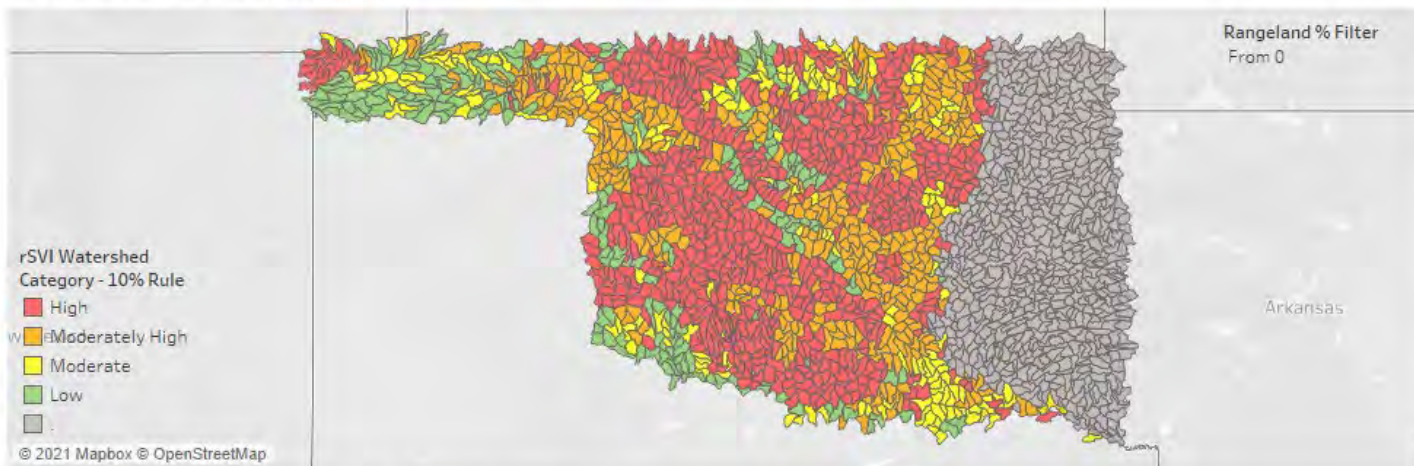


# rSVI – rangeland Soil Vulnerability Index

## rSVI (water)

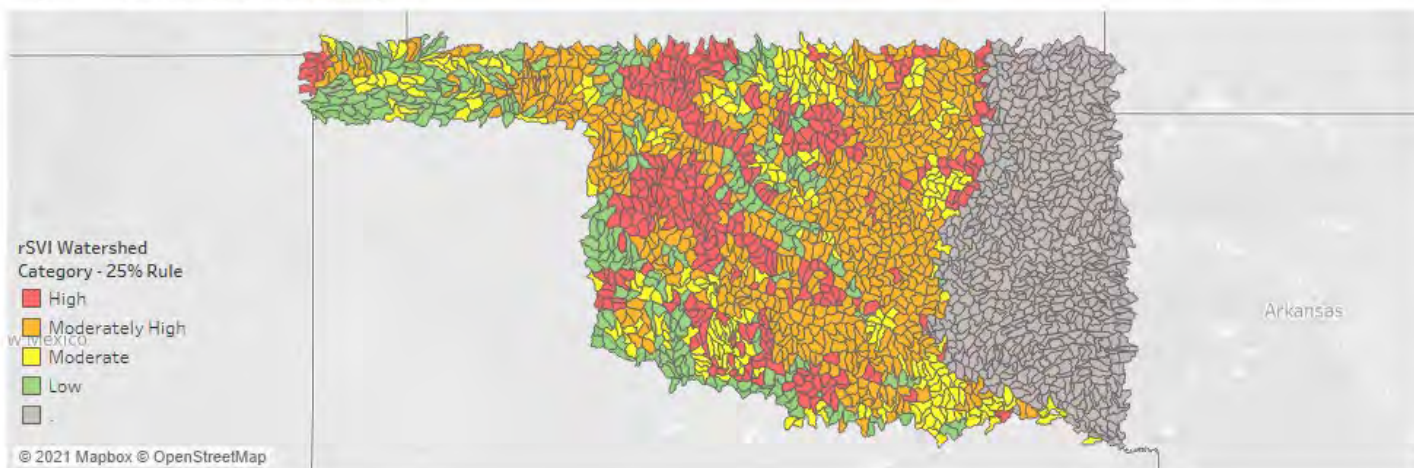
### rSVI for Water Erosion - HUC12 Watershed Category 10% High Rule

Note: The rSVI for water erosion HUC12 watershed category is based on the 10% high rule - If 10% or more of the rangeland within a watershed is "High", then that watershed category is "High". If not, then the majority category is assigned.



### rSVI for Water Erosion - HUC12 Watershed Category 25% High Rule

Note: The rSVI for water erosion HUC12 watershed category is based on the 25% high rule - If 25% or more of the rangeland within a watershed is "High", then that watershed category is "High". If not, then the majority category is assigned.





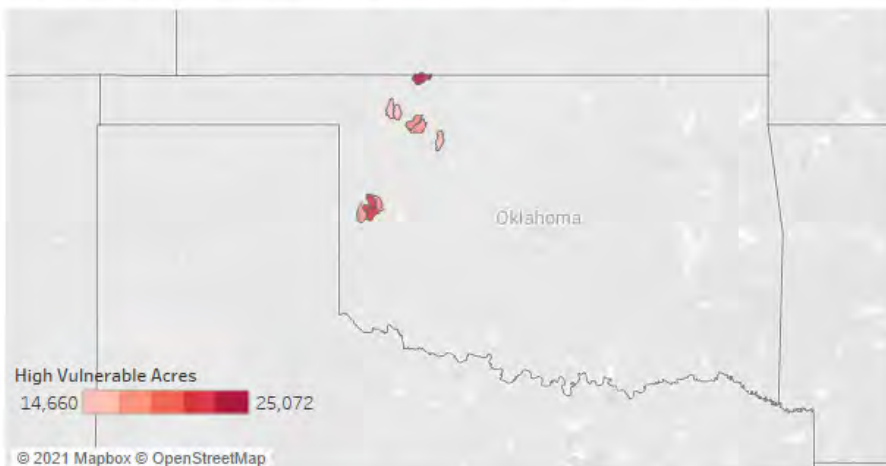
# rSVI – rangeland Soil Vulnerability Index

# rSVI (water)

Rangeland % Filter  
From 0

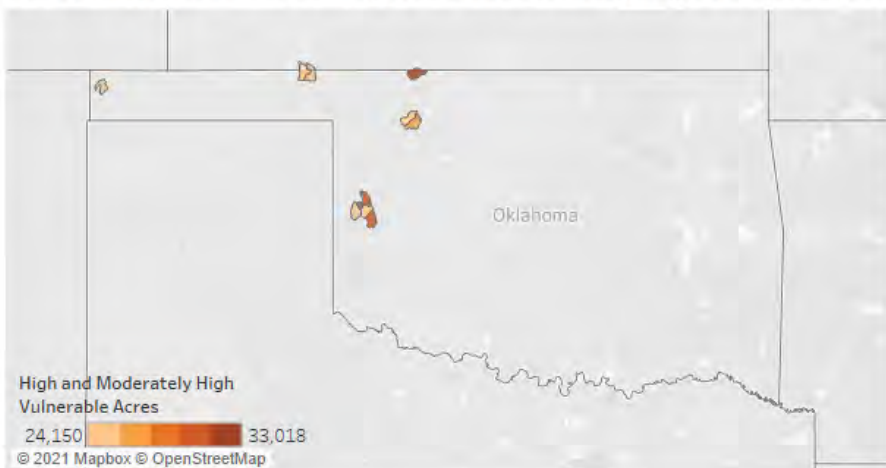
Top # of Watersheds  
10

rSVI for Water Erosion - High Vulnerable Acres by HUC12



Huc12	Name	
110600020303	Yellowstone Creek	25,072
111303010304	Wild Horse Creek-Washita River	22,415
111303010307	Beaverdam Creek-Washita River	20,914
111303010302	Sergeant Major Creek-Washita R..	18,471
111303010502	Ninemile Creek	17,921
110500010505	Cuddy Creek-West Creek	17,172
110500010502	Ames Reservoir-Sand Creek	17,104
110500010401	Upper Traders Creek	15,282
110500010703	Barney Creek	14,680
110500010204	Sleeping Bear Creek	14,660

rSVI for Water Erosion - High and Moderately High Vulnerable Acres by HUC12



Huc12	Name	
110600020303	Yellowstone Creek	33,018
111303010306	Lower Sandstone Creek	30,571
111303010304	Wild Horse Creek-Washita River	29,997
110500010505	Cuddy Creek-West Creek	26,865
111303010307	Beaverdam Creek-Washita River	25,238
110400060604	Irish Flats-Cimarron River	25,057
110400060605	Taintor Creek-Cimarron River	24,613
110500010502	Ames Reservoir-Sand Creek	24,595
110400020203	Lower South Carrizo Creek	24,275
111303010302	Sergeant Major Creek-Washita R..	24,150





# SSURGO-QueryTool

Choose MLRA, then go through the 14 filter categories on the left to find soils with those properties.

USDA United States Department of Agriculture STONE ENVIRONMENTAL 100% EMPLOYEE OWNED

## SSURGO-Query Tool

A National SSURGO Data Filter and Download Tool, developed for CEAP-Grazing Lands

SSURGO Filter (48,213 records)

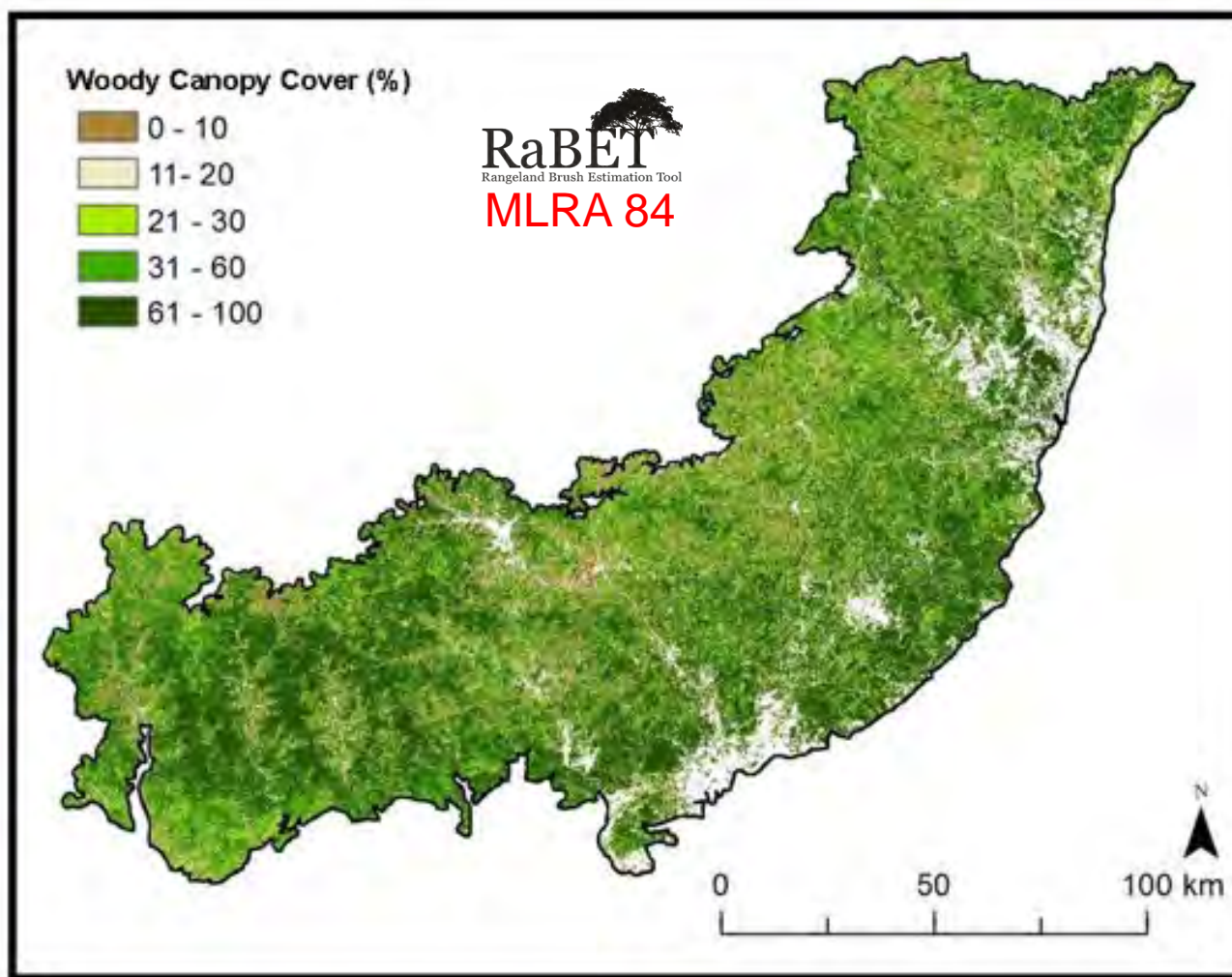
- 5: Soil Depth
- 6: Water Table
- 7: Hydrologic Group
- 8: Slope Class
- 9: Available Water
- 10: Chemistry Characteristics
- 11: Restrictions
- 12: Diagnostic Horizon or Feature
- 13: Ecological Site
  - Filter by: ID Name
  - Ecological Site Description Name ?
  - 0 selected
  - ☐ Choppy Sands
  - ☐ Limy Sands
  - ☐ Loamy Sands
  - ☐ Sands (Legacy)
  - ☐ Sandy
  - ☐ Sandy Claypan
  - ☐ Sandy (Legacy)
  - ☐ Shallow Gravel
  - ☐ Shallow Sandy
  - ☐ Shallow to Gravel (SwGr)
  - 10-14" p.z.
  - ☐ Thin Loamy (Legacy)
  - ☐ Thin Sands
  - ☐ Very Shallow
  - ☐ Very Shallow (Legacy)
- 14: Soil Component

Esri, USGS | State of North Dakota, Esri Canada, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS





# Rangeland Brush Estimation Tool





# Amazing Partnerships across the Nation!

- **Producers, Organizations**

- Ranchers, Society for Range Management, National Cattlemen's Beef Association

- **Federal & University Partners**

- ARS, NRCS, ERS, FSA, NASS, USFS, USFWS, BLM, Universities



- Across all **NRCS Deputy Areas**





# Stay Tuned. There's So Much More to Come!...

*MODELING RESOURCE  
CHANGE & RISK*

*BRINGING ECOSYSTEM  
SERVICES INTO  
PLANNING*

*USING NEW  
TECHNOLOGIES*



**CEAP Grazing Lands:  
Valuing America's Conservation Investment**

Natural  
Resources  
Conservation  
Service

[nrcs.usda.gov/](http://nrcs.usda.gov/)