

State Specific Training Module for Missouri

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Purpose of This Module

This module will provide some general information that TSPs need to conduct conservation planning in our state. This information is general in nature so the TSP may need to follow up with additional reading or training to make sure they have the knowledge, skill, licenses and certifications to conduct conservation planning in this state.

NRCS Business Model – Critical Concepts

- Private landowners are the key to successful conservation.
- Participation in conservation is voluntary.
- Planning is the cornerstone of the work NRCS does with landowners, groups and conservation partners.
- Conservation planning is a flexible, dynamic, and continuing process.
- Every acre is used according to its capacity and protected according to its need.
- Conservation planners are technically competent.

EXPECTED TSP WORKFLOW

Individuals interested in the TSP certification should work with the State TSP coordinator. TSP coordinator will assist individuals with the application/certification process.

Sample plans will be reviewed by the discipline lead/State specialists. Sample plan deficiencies must be corrected before certification is recommended.

Once TSP application is complete and sample plans have been reviewed/approved, TSP coordinator will discuss with the State Resource Conservationist (SRC) and will submit the State's decision to the Regional/National TSP coordinator for certification.

The State Resource Conservationist (SRC) or designee will be responsible for reviewing TSP conservation planning for the National Planner Designation.

Subsequent conservation plans will be reviewed by the Planning specialists at the local/area USDA Service Center.

The SRC/discipline lead/state specialists will be responsible for reviewing TSP completed work for TSP certification renewals and Quality Assurance Reviews.

TSPs will work with the local District Conservationist/Area Planning Specialists to make sure the proper environmental evaluations (NRCS.CPA.52) are completed.

Missouri State Contacts/Discipline Leads

State Resource Conservationist: Selma Mascaro selma.mascaro@usda.gov

State TSP Coordinator: Tyler Preston tyler.preston@usda.gov

State TSP Coordinator Back Up: TBD

State Agronomist: Patricia Turman pat.turman@usda.gov

State Biologist: Jason Sykes jason.sykes@usda.gov

State Engineer: Andrew Rackers andrew.rackers@usda.gov

State Forester: TBD

State Grazing Specialist: Jamie Kurtz jamie.kurtz@usda.gov

Engineering

Conservation Practices Requiring Professional Engineering License

- State Statute RSMo Chapter 327.181, 10 CSR 20 - 6.300 (3)(A)2. when engineering license is need for design of conservation practices:
- Agrichemical Handling Facility (309), Waste Storage Facility (313), Animal Mortality Facility (316), Composting Facility (317), Clearing and Snagging (326), Sediment Basin (350), Dike or Levee (356), Waste Treatment Lagoon (359), Waste Facility Closure (360), Diversion (362), Anaerobic Digester (366), Roofs and Covers (367), Air Filtration and Scrubbing (371), Farmstead Energy Improvement (374), Pond (378), Dam (402), Grade Stabilization Structure (410), Grassed Waterway (412), Dry Hydrant (432), Irrigation Reservoir (436), Lined Waterway or Outlet (468), Livestock Pipeline (516), Pond Sealing or Lining, Compacted Soil Treatment (520), Pond Sealing or Lining, Geomembrane or Geosynthetic Liner (521), Roof Runoff Structure (558), Access Road (560), Heave Use Area Protection (561), Stormwater Runoff Control (570), Spoil Disposal (572), Stream Crossing (578), Streambank and Shoreline Protection (580), Structure for Water Control (587), Terrace (600), Denitrifying Bioreactor (605), Watering Facility (614), Underground Outlet (620), Waste Separation Facility (632), Waste Transfer (634), Water and Sediment Control Basin (638), Energy Efficient Lighting System (670), Energy Efficient Building Envelope (672).
- ***Listed practices require Professional Engineering license for certification per NRCS Practice and Conservation Activity List and Certification Criteria FY2023. License must be obtained for MO.**

Conservation Practices Requiring Professional Engineering License

- State Statute RSMo Chapter 327.181, 10 CSR 20 - 6.300 (3)(A)2. when engineering license is need for design of conservation practices:
- Well Decommissioning (351), Irrigation Pipeline (430), Irrigation System – Microirrigation (441), Sprinkler System (442), Irrigation System – Surface and Subsurface (443), Irrigation and Drainage Tailwater Recovery (447), Irrigation Water Management (449), Anionic Polyacrylamide (PAM Application (450), Irrigation Land Leveling (464) Pumping Plant (533), Drainage Water Management (554), Spring Development (574), Saturated Buffer (604), Subsurface Drain (606), Surface Drainage, Field Ditch (607), Surface Drainage, Main or Lateral (608), Vertical Drain (630), Water Well (642), Wetland Restoration (657), Wetland Creation (658), Wetland Enhancement (659)
- ***Listed practices require certification that may be obtained through multiple avenues which includes Professional Engineering license per NRCS Practice and Conservation Activity List and Certification Criteria FY2023. MO specific statutes may require a professional license. Any professional license must be obtained for MO.**

Types of Erosion

Types of Erosion

- Sheet – soil removed in a uniform manner from all of the slope
- Rill – soil removed in numerous small channels only centimeters deep
- Gully – water concentrates in channels and removes soil to form a deep void.



Soil Erosion from Streams

- Stream bank erosion can be a tremendous source of sediment delivery to surface water.
- Changes in landscape hydrology can put more runoff into streams and increase the stream erosive power.
- Toe erodes first, then the top of the bank falls into the river as an unstable bank slope develops.
- Practices that increase infiltration enhance agricultural production while cutting sediment delivery from both the field and from the stream.



Vegetation Establishment

Permanent Vegetation Establishment

Conservation Practices

- Conservation Cover (327)
- Critical Area Planting (342)
- Field Border (386)
- Riparian Herbaceous Cover (390)
- Filter Strip (393)
- Pasture and Hay Planting (512)
- Wildlife Habitat Planting (420)

Document Seeding Plans on Practice Implementation Requirements (IR)

- Each practice may have different requirements
- Seeding rates may change
- Each IR acts as a seeding calculator



Permanent Vegetation Establishment

Species selected:

Based on species rating for –

Erosion control

Wildlife habitat

Wet soil tolerance

Drought tolerance

Producer's objectives

Recommend Native Species
when applicable



Permanent Vegetation Establishment

- **Planting Dates** – refer to specific IR guidance
- **Seed Quality**
 - All seed shall have a current seed test within 10 months of the planting date.
 - The seed test will list purity, germination, and hard seed as a percentage for determining Pure Live Seed (PLS) and list the percentage of weed seed present that meets state seed quality law standards.
 - Formula for (PLS) is $\text{Purity} \times (\text{Germination} + \text{Hard seed}) / 100$
 - Certified seed is preferred but not required.

Permanent Vegetation Establishment

- Inoculation of Legumes
 - Legume seed shall be inoculated with the proper, viable *Rhizobium* bacteria species prior to planting according to NRCS Plant Materials Technical Note 5 “Using the Appropriate Legume Inoculant for Conservation Plantings”, July 2021
 - **Inoculant is a living organism and will not be exposed to sunlight or excessive heat.**
 - **Pre-inoculated seed shall be planted prior to expiration date.**
 - **Inoculated seed will not be exposed to direct sunlight.**
 - **Follow the inoculant recommendations for the seeding practice.**

Non-Permanent Vegetation Establishment

Planting Annuals or Biennials

Conservation Practices:

- Cover Crop (340)
- Annuals Forages for Grazing Systems (810) – interim standard not available in every state
- Special purpose plantings
- Follow the criteria in practice standard, specifications, and implementation requirements
- Select planting dates that will allow adequate growth

Agronomy

Agronomy Practices

Agronomy Practices widely used on Missouri Cropland* include:

- Conservation Crop Rotation (328)
- Contour Farming (330)
- Residue Management Practices
 - Residue and Tillage Management No Till (329)
 - Residue and Tillage Management Reduced Till (345)

*Cropland accounts for approx. 30% of land area in the state

Nutrient Management and Pest Management Conservation System

Nutrient Management Requirements in Missouri

There is currently no state-mandated certification requirement for nutrient management.

Those approving nutrient management technical assistance for NRCS must use one of these options:

- Certification by Professional Organization
 - Certified Crop Adviser (CCA)
 - American Society of Agronomy
 - Certified Professional Agronomist (CPAg)
 - Certified Professional Crop Scientist (CPCSc)
 - Certified Professional Soil Scientist (CPSSc)
 - National Alliance of Independent Crop Consultants (NAICC)

OR:

Nutrient Management Requirements in Missouri (continued)

- Certification by Knowledge, Experience, Education
 - Technical knowledge of conservation practices, management activities, risk assessment tools
 - Knowledge of nutrient management policy and criteria
 - Bachelor or higher-level college degree in agronomy or natural resources and at least one year of experience

Nutrient Management Requirements in Missouri (continued)

- General Requirements for Certification (required for ALL certified planners)
 - Complete Modules 1-7 of the Nutrient Track of the NRCS course- *Nutrient and Pest Management Considerations in Conservation Planning*. Modules 1-6 are online, and Module 7 is a facilitating session administered by Missouri NRCS Ecological Sciences Staff.
 - Submit two completed nutrient management plans and customer contacts

Comprehensive Nutrient Management Plan(CNMP) Requirements in Missouri

There is currently no state-mandated certification requirement for CNMP development.

Those approving CNMP technical assistance for NRCS must meet minimum requirements for certification for nutrient management planning, attend the MO CNMP course, and submit two examples of CNMP planning.

CNMP Requirements in Missouri (continued)

The delegated authority for permitting of animal feeding operations (AFOs) in the Missouri Department of Natural Resources (MDNR)

Permitting requirements are determined by the number of animal units (AUs) confined by an operation. Class size determination guidance can be found at

[Animal Feeding Operation Permits and Regulations in Missouri - PUB2351 | Missouri Department of Natural Resources \(mo.gov\)](#)

CNMP Requirements in Missouri (continued)

Missouri state regulations require that Class I CAFOs and Class II AFOs defined/designated as CAFO due to a discharge obtain a NPDES (National Pollutant Discharge Elimination System) permit, or a State No-Discharge operating permit

CNMP Requirements in Missouri (continued)

New or expanding Class I CAFOs must obtain a construction permit for construction/modification of an earthen basin for manure storage.

Prior to storage system operation, a CAFO must obtain an operating permit

- NPDES—this permit allows for discharge from uncovered storage due to a catastrophic storm or chronic weather event
- State No-Discharge—no discharge is allowed for any reason

Class IA CAFOs (≥ 7000 AU) must obtain a site-specific operating permit that incorporates MDNR-specified monitoring and reporting requirements

CNMP Requirements in Missouri (continued)

Additional permitting requirements

- Land disturbance permit if > 1 acre of land is disturbed during construction
- §404, Clean Water Act Permit—from U.S. Army Corps of Engineers when disturbing or discharging into Waters of the United States, including wetlands

Buffer and Neighbor Notice Distances

- Class I CAFOs must meet buffer distance requirements for public buildings and occupied residences
- Prior to submitting an application for an operating permit Neighbor Notice letters must be submitted that contain specific information about the to operation to all landowners within 1 ½ times the buffer distance

CNMP Requirements in Missouri (continued)

Production Area Setback Distances

- Those locating animal housing, open lots, manure storage structures, and mortality composting sites must observe minimum setback distances from identified features (See Table 4, [Animal Feeding Operation Permits and Regulations in Missouri - PUB2351 | Missouri Department of Natural Resources \(mo.gov\)](#))

Land Application Area Setback Distances

- Those land-applying manure and (or) wastewater must observe minimum setback distances from sensitive features (See Table 5, [Animal Feeding Operation Permits and Regulations in Missouri - PUB2351 | Missouri Department of Natural Resources \(mo.gov\)](#))

Pest Management Conservation System Requirements in Missouri

There is currently no state-mandated certification requirement for Pest Management Planning in Missouri.

Those approving Pest Management Conservation System technical assistance for NRCS must satisfy these requirements:

- License—commercial applicator license required by Missouri law *when actually apply pesticides*
- Experience—proficient in use of erosion prediction and pest management risk assessment tools (RUSLE2, WEPS, WinPST)

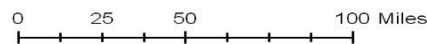
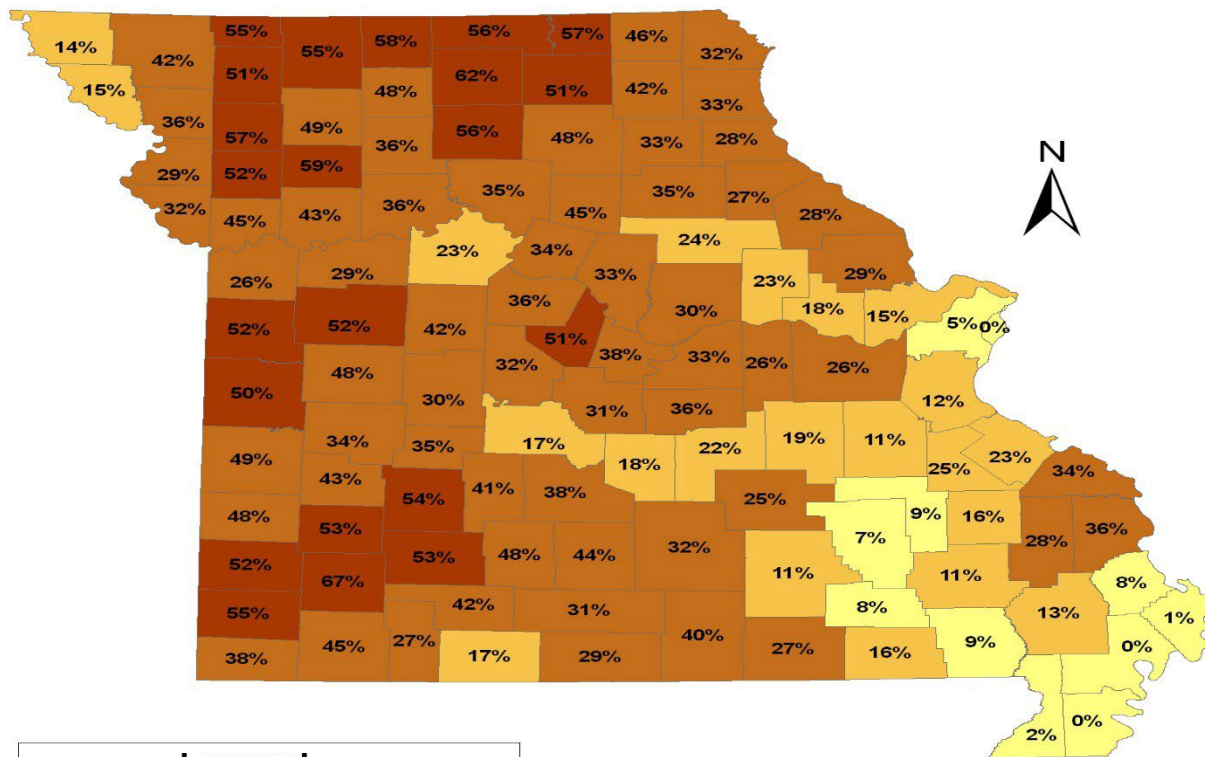
Pest Management Conservation System Requirements in Missouri (continued)

Those approving Pest Management Conservation System technical assistance for NRCS must satisfy these requirements (cont'd):

- Training—
 - Complete Modules 1-7 of the Pest Management Track of the NRCS course-*Nutrient and Pest Management Considerations in Conservation Planning*. Modules 1-6 are online, and Module 7 is a facilitating session by Missouri NRCS Ecological Sciences Staff.
 - Submit two completed pest management plans and customer contacts

Grasslands

Missouri Grasslands



Source: 2010 National Ag Statistics Service (NASS) classification of Landsat TM satellite imagery

Missouri Grassland Facts

Missouri has:

- 6,882,610 acres of pasture
- 3,366,938 acres of hayland
- 4,110,000 total head of cattle (including calves)
- 1,945,000 head of beef cattle (breeding stock)
- 99,000 head of sheep
- 87,200 head of goats

Grassland Related Conservation Practices

- Brush Management (314)
- Fence (382)
- Forage Harvest Management (511)
- Herbaceous Weed Treatment (315)
- Pasture and Hayland Planting (512)
- Prescribed Grazing (528)

TABLE 1
GRAZING MANAGEMENT GUIDELINES

Pasture type (select an option that most closely reflects the one being planned)	Begin Grazing ¹ (inches)	End Grazing Height Continuous ² (inches)	End Grazing Height Rotational ³ (inches)	Min – Max Rest Period ⁴ (days)	Min-Max Grazing Periods ⁵ (days)	Minimum Pastures needed ⁶ (number)
Single species (pastures containing only 1 species)						
Introduced grasses	6 – 8*	4 – 5	3 – 4*	20 - 45	10 - 22	3
Introduced legumes	8 – 10*	4 – 5	3 – 4*	25 – 35 (45)**	5 – 7 (9)**	6
Native grasses	12 - 18	***	6 – 8	30 – 50	10 – 17	4
Simple Mixtures (2 – 4 like species or grass + legume)						
Introduced Grasses/legume	6 – 8	4 – 5	3 – 4	25 – 45	8 – 15	4
Native grass mix	12 – 18	***	6 – 8	30 – 50	8 – 12	5
Complex Mixtures (5+ species)						
Introduced grasses/ legumes/forbs	6 – 8	***	3 – 4	25 – 45	5 – 9	6
Native grass/legume/forbs	12 – 18	***	6 – 8	30 – 50	4 – 7	8

Forestland

The Eastern Ozarks is the most heavily forested area in the state, with the remainder of the Ozarks next most heavily forested.



Review of Major Land Uses

Forestland

- Missouri is approximately 35% forested (15.4 million acres)
- Over 80% of forestland is privately owned
- Only approximately 5% of the forest landowners have a forest management plan written by a professional forester
- 169,359 acres of forest land are treated by cutting (harvest, thinning, etc.) annually
- Missouri has no laws or regulations pertaining to logger certifications or licensing, but does have “voluntary” Best Management Practices (BMPs) for watershed protection and harvesting activities
- Approximately 2.5 million acres of Missouri forest is detrimentally impacted by unmanaged grazing by domestic livestock, which negatively impacts forest health, soil quality, wildlife habitat, and water quality

Review of Major Land Ownership

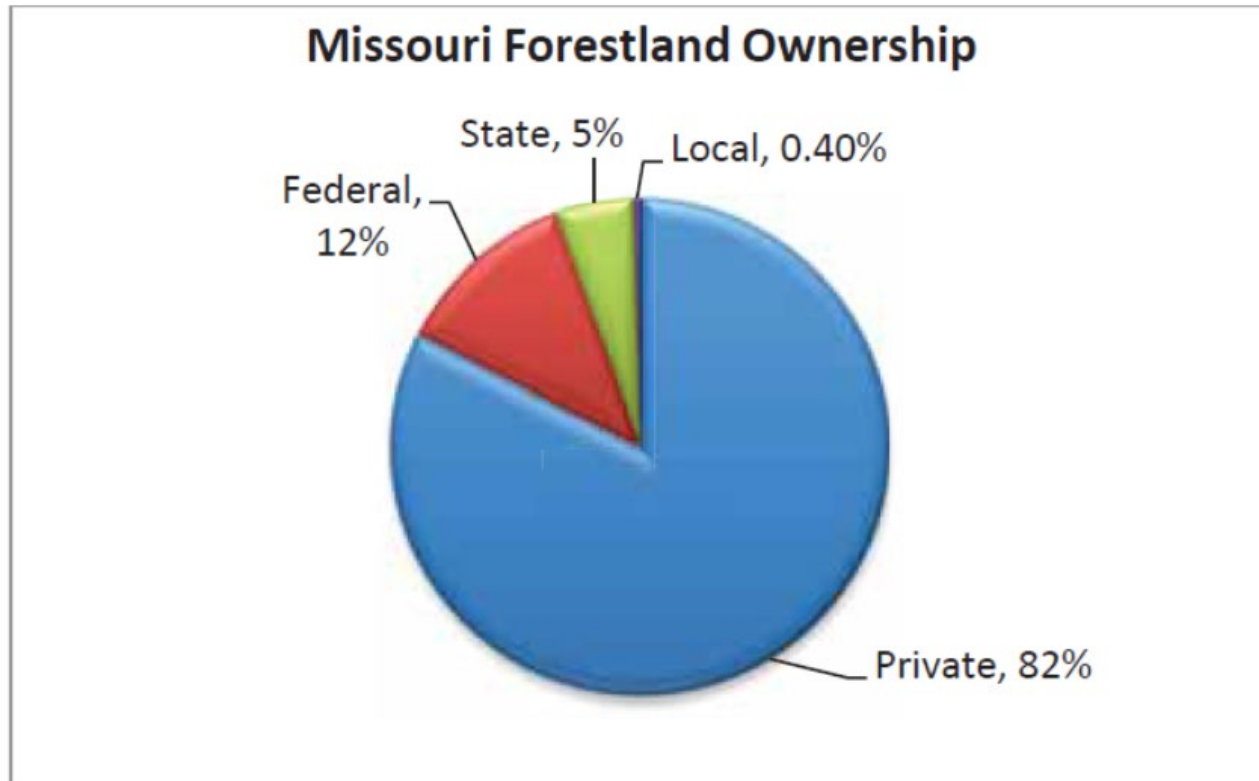


Figure 1.1 Missouri Forestland Ownership

Source (USDA Forest Service. 2022. Forests of Missouri 2021. Resource Update FS-359. Madison, WI: U.S. Department of Agriculture, Forest Service. 2p. <https://doi.org/10.2737/FS-RU-359>)

Missouri NRCS Agroforestry and Forestry Practice Codes

Practice Name	Code
Access Control (ac)	472
Alley Cropping (ac)	311
Brush Management (ac)	314
Early Successional Habitat Development/Management (ac)	647
Firebreak (ft)	394
Forest Farming (ac)	379
Forest Stand Improvement (ac)	666
Forest Trails and Landings (ac)	655
Prescribed Burning (ac)	338

Practice Name	Code
Restoration of Rare or Declining Natural Communities (ac.)	643
Riparian Forest Buffer (ac)	391
Silvopasture Establishment (ac)	381
Structures for Wildlife (each)	649
Tree/Shrub Establishment (ac)	612
Tree/Shrub Pruning (ac)	660
Upland Wildlife Habitat Management (ac)	645
Windbreak/Establishment/Renovation (ft)	380

Wildlife Habitat

USDA Fish and Wildlife Policy

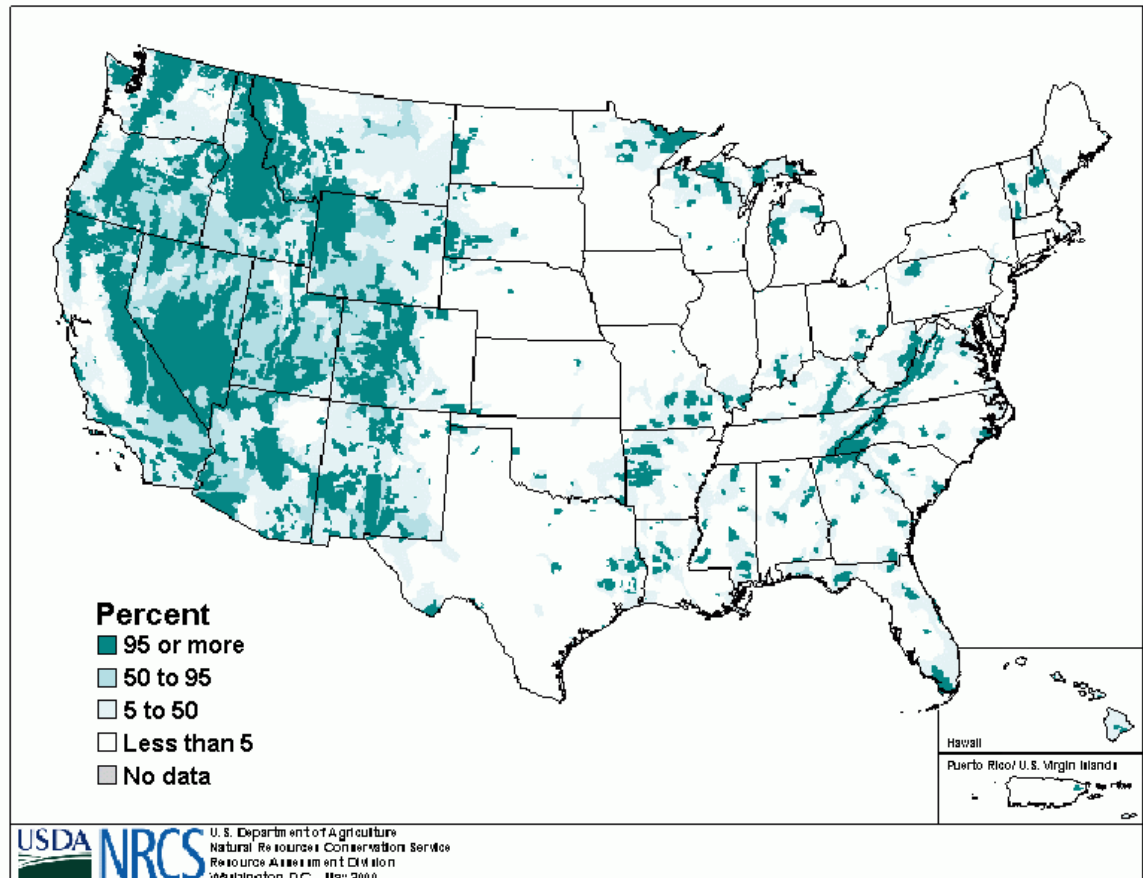
- NRCS provides fish and wildlife habitat assistance to landowners in accordance with the USDA Fish and Wildlife Policy (USDA Reg. 9500-4, 8/22/83)

“It is the policy of USDA to assure that the values of fish and wildlife are recognized, and that their habitats, both terrestrial and aquatic, including wetlands, are recognized, and enhanced, where possible, as the Department carries out its overall missions.”

60 % of the Nation's lands are private
>93% of Missouri's lands are private

**Fish and
wildlife don't
recognize
boundaries.**

**Wildlife Habitat is
applicable to
every NRCS land
use.**



Fish and Wildlife-Associated Recreation:*

Participants: 133.3 million

Expenditures: \$156.9 billion

- **Hunting and fishing expenditures: \$72.3 billion (increase of \$15.3 billion from 2011)**
- **Wildlife Watching Expenditures: \$75.9 billion (increase of \$37.9 billion from 2011)**

***USFWS 2016 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation**

Wildlife Standards and Practices

- Upland Wildlife Habitat Management (645)
 - Wildlife Watering Facility
 - Perennial Food Plot
- Wildlife Habitat Planting (420)
 - Native Species
 - Pollinator Species
 - Monarch Species
- Restoration of Rare or Declining Natural Communities (643)
 - Woodland Restoration
 - Savanna or Prairie Restoration
 - Glade Restoration

Wildlife Related Standards and Practices

- Structures for Wildlife (649)
 - Edge Feathering
 - Downed Tree Structure
- Early Successional Habitat Development/Mgmt (647)
 - Disking
 - Mowing and Heavy Disking (brushhog plus multiple disk passes)
 - Strip Spraying
- Shallow Water Development and Management (646)
 - Shallow Water Management
- Wetland Restoration (657)

Wildlife Related Standards and Practices

- Conservation Cover (327)
 - Native Species
- Field Border (386)
 - Native Species
 - Pollinator Species
- Prescribed Burning (338)
 - Grassland
 - Woodland
- Brush Management (314)

Wildlife Related Standards and Practices

- Tree & Shrub Establishment (612)
 - Covey Headquarters Planting (645)
- Forest Stand Improvement (666)
 - Temporary Forest Openings

Environmental Evaluation

Environmental Evaluation

The Environmental Evaluation (EE) is “the part of planning that inventories and estimates the potential effects on the human environment of alternative solutions to resource problems”. (7 CFR 650.4 and GM 190 Part 410.4(D).) This form provides for the documentation of that part of the planning process and was designed to assist the conservation planner with compliance requirements for applicable Federal laws, regulations, Executive Orders, and policy. The form also provides a framework for documenting compliance with applicable State, Tribal and local requirements.

Environmental Evaluation

NRCS is required to conduct an EE on all actions to determine if there is a need for an Environmental Assessment (EA) or an Environmental Impact Statement (EIS). The EE process results in a "Finding" or conclusion that, either further NEPA analysis is required (EA or EIS) or that no EA or EIS is required because: 1) There is no federal action; 2) The action is categorically excluded; or 3) There is an existing NRCS or NRCS-adopted NEPA document that has sufficiently analyzed the effects of this action. The EE applies to all assistance provided by NRCS (7 CFR 650.5 and GM 190, Part 410.5). The NRCS-CPA-52 form is used by NRCS to document the results of the evaluation and show compliance with NRCS regulations implementing NEPA at 7 CFR Part 650.

Environmental Evaluation

- Prior to developing the Conservation Activity Plan (CAP), contact the applicable NRCS Field Office and request a completed NRCS-CPA-52 form for the CAP.
- Refer to the Special Environmental Concerns section of the NRCS-CPA-52 to identify whether a Special Environmental Concern is present in the action area or potentially may be affected and the current status or condition of the concern and guidance for addressing special environmental concerns.

Additional References or Training

- State Field Office Technical Guide at [Field Office Technical Guide | NRCS - USDA](#) go to Missouri eFOTG.

Certificate of Completion

After viewing the State Specific Training module, please print and sign the completion certificate on the following slide.

The certificate is your acknowledgement that based on the information provided in this module, you have the proper knowledge, skills and ability to conduct planning in this state.

Send the signed certificate to the State TSP Coordinator. Copy the below link to your browser for a list of State TSP Coordinators.

[State TSP Coordinators and backups \(usda.gov\)](#)

STATE SPECIFIC TRAINING MODULE COMPLETION CERTIFICATE

I, _____ hereby verify I have viewed and understand the content of *Missouri State*
TSP Name
Specific Training Module and affirm I have the knowledge, skills, and ability to conduct conservation planning
services in this state.

TSP Signature

Date

Non-Discrimination Statement

Non-Discrimination Policy

The U.S. Department of Agriculture (USDA) prohibits discrimination against its customers, employees and applicants for employment on the bases of race, color, national origin, age, disability, sex, gender identity, religion, reprisal, and where applicable, political beliefs, marital status, familial or parental status, sexual orientation, or all or part of an individual's income is derived from any public assistance program, or protected genetic information in employment or in any program or activity conducted or funded by the Department. (Not all prohibited bases apply to all programs and/or employment activities.)

To File an Employment Complaint

If you wish to file an employment complaint, you must contact your agency's EEO Counselor within 45 days of the date of the alleged discriminatory act, event, or in the case of a personnel action. Additional information can be found online at http://www.ascr.usda.gov/complaint_filing_file.html

To File a Program Complaint

If you wish to file a Civil Rights program complaint of discrimination, complete the USDA Program Discrimination Complaint Form, found online at http://www.ascr.usda.gov/complaint_filing_cust.html, or at any USDA office, or call (866) 632-9992 to request the form. You may also write a letter containing all of the information requested in the form. Send your completed complaint form or letter to us by mail at U.S. Department of Agriculture, Director, Office of Adjudication, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9419, by fax at (202) 690-7442, or email at program.intake@usda.gov

Persons with Disabilities

Individuals who are deaf, hard of hearing or have speech disabilities and you wish to file either an EEO or program complaint please contact USDA through the Federal Relay Service at (800) 877-8339 or (800) 845-6136 (in Spanish).

Persons with disabilities, who wish to file a program complaint, please see information above on how to contact us by mail or by email. If you require alternative means of communication for program information (e.g., Braille, large print, audiotape, etc.), please contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

Supplemental Nutrition Assistance Program

For any other information dealing with Supplemental Nutrition Assistance Program (SNAP) issues, persons should either contact the USDA SNAP Hotline Number at (800) 221-5689, which is also in Spanish, or call the State Information/Hotline Numbers.

All Other Inquires

For any other information not pertaining to civil rights, please refer to the listing of the USDA Agencies and Offices.