SOIL AND PLANT SCIENCE DIVISION

Technical Soil Services

South Central Soil Survey Region

Bryan, Texas, Major Land Resource Area (MLRA) Soil Survey Office (SSO)

Soil Scientist Elevates People's Knowledge of Soils During Habitat Management Landowner Field Day at Gus Engeling Wildlife Management Area (WMA)

Purpose

On October 13, 2023, Natural Resources Conservation Service (NRCS) Soil and Plant Science Division (SPSD) staff Dr. Beyhan Amichev, MLRA SSO leader and soil scientist, joined a team of wildlife and plant biologists from the Texas Parks and Wildlife Department (TPWD) for a landowner habitat management demonstration field day at the Gus Engeling WMA located near Tennessee Colony, Texas. The goal of this field day was to teach new and expert landowners about cost-effective and efficient tools used in habitat restoration and management, which included native plant identification.

Background

Gus Engeling WMA, 11,079 acres in size, is managed as a research and demonstration site for Post Oak Savannah and Bottomland Hardwood Forests and is part of the Middle Trinity River Ecosystem within the Post Oak Savannah Ecoregion. This ecoregion spans across 32 counties in Texas and encompasses sandy to sandy loam soils formed on gently rolling topography. For more than a decade, TPWD biologists have implemented habitat management plans with the goal of creating 2,500 acres of restored and managed Post Oak Savannah landscape at the WMA. The field day brought together more than 30 landowners from across the area who were interested in learning more about the use of tools for habitat restoration and management, such as prescribed burning, riparian area protection, native grass reseeding and planting, as well as native plant identification. The highlight of the field day was a tour of a restored and managed Post Oak Savannah landscape (see Figure 1, Figure 2, and Figure 3). At the tour site, Dr. Amichev was asked to talk about the soils at this site regarding the current success of the Post Oak Savannah restoration project. Dr. Amichev dug a small soil pit with a sharpshooter shovel to use as a hands-on teaching tool to explain how soil organic matter and soil organic carbon accumulate in the soil over time due to plant

root growth, root exudates, soil microbial life dynamics, litter layer accumulation, and maintaining soil cover. He also explained how different-sized soil mineral particles, such as sand, silt, and clay, play important roles in maintaining good soil structure, water-holding capacity, fertility, and overall high soil resilience. The size analogy of sand, silt, and clay soil particles to a beach ball, a tennis ball, and a pinhead, respectively, was well received by the landowners. Dr. Amichev also talked about the wealth of information available to landowners from USDA-NRCS-SPSD maintained web tools such as the Web Soil Survey (WSS) and the Ecosystem Dynamics Interpretive Tool (EDIT).

Key Outcomes

The landowners learned about the importance of including soils knowledge in their habitat management plans, including soil texture, soil organic matter and soil carbon, water-holding capacity, and soil fertility. Although only about a quarter of this group of landowners knew about or had used soil maps prior to this field day, all of them were left with elevated soils knowledge and soil learning tools to help them continue being better stewards of the land while achieving their objectives and goals.

Figure 1.—Kyle Brunson, TPWD wildlife biologist, talked about the work that was carried out in the past decade to create a restored Post Oak Savannah landscape at the Gus Engeling WMA.

Figure 2. —A view of the restored Post Oak Savannah landscape at the Gus Engeling WMA, created on Very Deep Sand soils (Arenosa series: Thermic, uncoated Ustic Quartzipsamments).

Figure 3. —Kyle Brunson, TPWD wildlife biologist, talked about the use of tools for habitat management, such as prescribed burning, timber removal, herbicide application, and native grass seeding and planting, which were used in the Post Oak Savannah restoration project at Gus Engeling WMA.