USDA Natural Resources Conservation Service
U.S. DEPARTMENT OF AGRICULTURE

Soil and Plant Science Division

Technical Soil Services

Northwest Soil Survey Region

Major Land Resource Area (MLRA) 43B—Central Rocky Mountains

Soil Camp With U.S. Forest Service

Purpose

In June 2025, Region One of the U.S. Forest Service (Forest Service) hosted its annual Soil Camp on the Beaverhead-Deerlodge National Forest (BDNF). During the camp, soil scientists met to discuss their projects and see features of the hosting forest (fig. 1). Staff from the Dillon, MT, MLRA Soil Survey Office (SSO) joined 2 days of field trips to meet nearby soils professionals and learn about soils data being collected and used by the Forest Service, which is a primary land management agency in the area.

Figure 1.—Soil Camp participants. Image courtesy of Forest Service staff.

Background

The Dillon MLRA SSO has recently completed initial mapping, so now is the time to reconnect with land managers and develop local soil projects. The camp provided an opportunity for the SSO staff to meet with Forest Service staff to better understand their needs and uses of soils data, tour different soil and vegetation projects on the BDNF, and establish a relationship for future update projects and technical soil services.

The first stop was at an experimental site where slash piles had been burned. The piles became plots with different post-fire treatments; biochar raked in with seed (Plot one),

woodchips on raked in seed (Plot two), seeded and raked (Plot three), and no seed or applications (Plot four). When camp participants visited, most of the biochar had blown off Plot one, with some germination success. Plot two had woodchips remaining and the highest germination success (fig. 2). Plots three and four still resembled the charred surface of the burn piles (fig. 2). Participants discussed factors that contributed to the plot outcomes, as well as the feasibility of scaling up the treatments.

Figure 2.—Plot two (left), which was treated with mulch and seed. Plot four (right), which was not covered or seeded. Images courtesy of Forest Service staff.

The next stop was a logged and prescribed burned site. Forest Service soil scientists explained the protocol for assessing soil burn severity, which evaluates surficial characteristics such as surficial organic litter, root health, and the soil's ability to repel water. Participants discussed the association between burn severity and recovery potential, and how these are not always inversely related.

The last stop was a logged site, where participants split into two groups to perform the Forest Service Detrimental Soil Disturbance protocol. It involves transects across a site and the evaluation of erosion, compaction, depth of organic soil materials, and soil texture. Participants also noted larger slash piles that had been burned, and the impact of the heat included a hydrophobic surface and burnt surficial roots.

On the second day, participants drove to the 2021 Haystack Wildfire, where culverts failed and an important road was closed, as a result of the hot fire, highly erosive soils, and an intense storm. The Burned Area Emergency Response program allowed Forest Service staff to install fords where culverts had been, as well as shrub plantings to stabilize the soil and provide forage for elk, mule deer, and cattle grazing. The shrub plantings are in partnership with the Mule Deer Foundation and were interesting to other soil staff, as the BDNF has more shrubland than typically found on forests in Region One. Participants also dug a soil pit, noting an inch of new material deposited on top of the old soil surface (fig. 3) and observed a highly stratified soil profile in a drainageway (fig. 4).

Figure 4.—A pit showed deposition from post-fire and storm on the original soil surface.

Figure 5.—Soils staff examine stratified layers in a drainageway through an alluvial fan.

Then, participants drove to a lookout point to see some of the 20,000-acre fire. Range specialists discussed methods they used to adjust grazing plans to allow allotments to recover from fire before being grazed. Participants also learned about the forest's utilization limits and grazing plans as well as how USFS staff use ecological site information and soil data to adjust or recommend different grazing strategies.

Key Outcomes

Throughout the field tour, the Dillon MLRA SSO staff expanded their understanding of the soils side of the Forest Service, including protocols, data collection, and changes in soil properties from fire and logging. They also discussed future collaboration to assist the BDNF soil scientist and to investigate survey boundaries. By participating in events like Soil Camp, SSO staff learn about data collected and data needed by NRCS partners, and with this information, they can better provide technical assistance and accurate data to partners and other land managers.