USDA Forest Service
U.S. DEPARTMENT OF AGRICULTURE

Rocky Mountain Research Station | South Dakota State Fact Sheet | June 2025

Improving Lives and Landscapes in South Dakota

The Rocky Mountain Research Station contributes to dynamic land management needs across public and private land in South Dakota. Innovation and research centered around local solutions and partnerships offer new methods for adapting and shaping land management decisions.

Grasslands and Rangelands

Land managers in South Dakota's mixed-grass prairie are **actively seeking strategies to support the area's resilience to drought**. This grassland type supports some of the country's largest cattle producers and is also home to unique plants and animals and numerous recreational opportunities.

RMRS is working with practitioners on the Sagebrush Conservation Design project, which provides comprehensive resources for **managing sagebrush ecosystems** and ways to measure outcomes supporting their health and resilience.

The Northern Plains Climate Hub is a multi-stakeholder effort providing South Dakota ranchers, farmers, and forest landowners with the best-available science to support agricultural production and resources on **drought and extreme weather**. Related resources include a new assessment of the Northern Great Plains.

Researchers have found that **belowground bud** structures in plants improve survival during drought and provide resistance to growing threats. These same bud structures provide advantages to invasive grasses encroaching into Western grasslands.

Researchers aim to offer tailored management tools and metrics to aid range specialists and ranchers in determining whether and how to adjust grazing operations during or following drought through a study of grazing and forage response under seasonal and long-term drought scenarios.

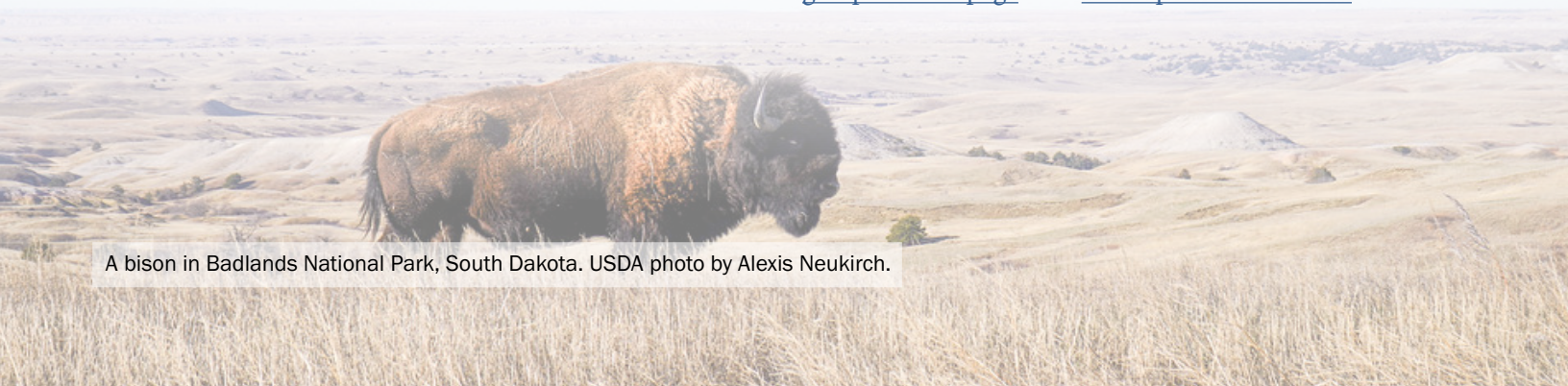
RMRS and partners have developed online tools like StockSmart and the Rangeland Production Monitoring Service for managers and operators to **estimate forage production, fire risk, and appropriate stocking rates**. The Reading the Tea Leaves webinar series is another resource that provides updated forecasts around future rangeland fuel and fire conditions.

Phenology research offers managers necessary information to time decisions **around grazing, restoration, pest control, seed collection, and wildlife**. This is supported by the PhenoMap tool, which offers weekly assessments of grasslands, shrublands, and forests using vegetation greenness.

RMRS scientists are helping managers ensure that long-term productivity and multi-use goals are compatible in the Great Plains by identifying impacts of energy development and ways to mitigate them. This includes assessments for special areas such as the Little Missouri National Grassland, home to several species of management concern. The Station is also pioneering new remediation techniques to help restore mine sites with biochar.

Timber Management and Forest Health

Forest Inventory and Analysis (**FIA**) data supports forest planning decisions, timber harvest, timber prices, and silviculture prescriptions. This inventory data **guides significant financial investments** for timber mills, wood-products plants, and identifies landscapes at risk to wildfire. A suite of data and tools is offered on a on a geospatial webpage with State-specific fact sheets. The



A bison in Badlands National Park, South Dakota. USDA photo by Alexis Neukirch.

Station's TreeMap model and tools combine inventory and LANDFIRE data to provide spatial information on **forest characteristics**.

RMRS has compiled resources on historic forest structure in the Black Hills and assessments of timber stock levels for key conifer species. This includes research on the **impacts of the mountain pine beetle on timber resources** and sustainable harvesting strategies for ponderosa pine.

A new study looks at the dynamics between logging rates and the spread of exotic plants. Researchers found that heavily logged areas experience higher values of invasive plant encroachment, while areas with lower harvest rates have minimal or even reduced encroachment values. This knowledge helps foresters **plan post-logging treatments to mitigate invasive species**.

RMRS research identifies the feasibility of tree regeneration in the Black Hills. RegenMapper is a web-based tool for assessing **regeneration potential** following wildfire. It enables users to upload a classified burn severity map to visualize the probability of natural forest recovery.

RMRS designs silviculture studies based on future forest conditions to increase the success of reforestation and timber management projects. These studies provide critical resources to managers, including tools like seed transfer guidelines, to improve rates of establishment.

Wildfire Preparedness and Response

The Wildfire Risk Management Science Team has developed a suite of tools with real-time information and **decision support for wildfire managers**, which are available in an interactive dashboard. The Team has codeveloped the Incident Strategic Alignment Process with incident management teams, which is now used by complex incident management teams nationwide.

In 2024, the Wildfire Risk to Communities website was updated with new data reflecting more recent weather observations, vegetation data, and building footprint datasets. First established in 2020, it has become a critical **resource for communities reducing their risk to wildfire**. Users can explore and view new data and download summaries and descriptions of data layers. A local risk snapshot for South Dakota is also available.

Long-term studies in dry conifer forests provide important information about different **forest treatments** and **how fire interacts** with managed versus unmanaged forests. A Science You Can Use summarizes main takeaways about fire and fuel treatments with visual comparisons in these forests.

Wildlife and Recreation

RMRS partners with the state wildlife management agency to deliver information about dispersal using genetic sampling of **mountain lions** moving through South Dakota. This research identifies their movements and origins to inform management decisions for this top game species.

In collaboration with South Dakota State University, researchers are looking at how to support recreationists and improve revenue from hunting and fishing permitting and sales. Focusing on a key demographic, women hunters and anglers, we are uncovering which resources and networks are effective at supporting active participation.

A 2025 study explores how **pollinator ranges** are shifting across the country, with recommendations to support improved habitat and recovery. Past research shows that strategic grazing and fire for specific species could be effective.

RMRS Facilities in South Dakota

- Black Hills Experimental Forest
- Rapid City Forest and Grassland Research Laboratory

Future Collaboration Opportunities

- Developing markets for wood byproducts
- Creating standards and tools to support grazing under increasing drought
- Aiding coexistence of livestock and wildlife
- Managing for invasive species and pollinators
- Developing beneficial partnerships across State agencies, Tribes, and communities

For more information, please contact Station Director Richard Barhydt (**richard.barhydt@usda.gov**)

https://research.fs.usda.gov/rmrs