South Dakota Ranchers Are Burning the Prairie to Save It

A “green glacier” of trees is steadily taking over native grasslands. Landowners are banding together to treat the problem with fire.

A prescribed fire field training in Astoria, S.D, in 2023. Credit...Joe Dickie Photography

By Sachi Kitajima Mulkey

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Sara Grim’s ranch near Bonesteel, S.D., is a ruggedly beautiful place. Three generations of her family have grazed cattle on the pleated hills of prairie grass that slope down to the Missouri River, winding toward the broad horizon like a painter’s brushstroke. In 2016, she and her husband, Rich, decided to set it ablaze.

“I was scared out of my mind, we were losing sleep,” Ms. Grim said. “In this country, fire was a bad word.”

Eastern red cedar trees had grown so thick that the Grims were having trouble riding horses through the pastures, let alone managing their cattle. They hoped the flames, in what’s known as a prescribed burn, would halt the spread of the evergreens taking over their land.

For decades Eastern red cedar has crept across Plains states, earning it the regional nickname the “green glacier.” Its spread has come at the cost of native grasslands, which are one of the most endangered kind of biomes in the world, and has squeezed the land available for livestock.

The carefully planned burn in 2016 worked so well that the Grims have since burned two more sections of the ranch, totaling hundreds of acres. “We’re never, ever going to get all of the trees,” Ms. Grim said, “but the progress we’ve made has been unbelievable.”

Shane Reis, left, with Sara and Rich Grim on their ranch in Bonesteel, S.D., and part of the ranch that was burned. Credit...Joe Dickie Photography

The fire was the first burn run by the Mid-Missouri River Prescribed Burn Association, a nonprofit group started after Dave Steffen, a retired conservationist who died in 2021, approached Ms. Grim and offered to survey her land. Shortly after, Ms. Grim joined him and six others in founding the group, which was modeled after well-established burn associations in Nebraska and Oklahoma.

With the support of conservation groups, the state and universities, the group has conducted more than two dozen burns across nearly 9,500 acres. In any given year, it has 50 to 75 paying members. In the last two years, two additional prescribed burn associations have formed in other parts of the state.

The broad conversion of prairie to farmland for row crops like corn and wheat over the last century caused a decline in native grasslands. In the 1930s, the Dust Bowl storms prompted the federal government to plant large numbers of Eastern red cedar to break up wind in the region. The gradual spread of the trees has squeezed native grasslands ever since.

“The numbers are just staggering,” said Dirac Twidwell, a professor of rangeland ecology at the University of Nebraska who has studied the benefits of the burn associations. Together, agriculture and red cedars were responsible for 10 million acres of lost prairie between 2008 and 2016, according to data from the United States Department of Agriculture.

While red cedar succumbs to fire, the natural prairie ecosystem thrives after a burn. Many native plants have evolved deep root systems and seed adaptations that help diverse grassland ecosystems bounce back, Dr. Twidwell said.

Before settlers began suppressing fire in the late 19th century, Native tribes in the region had long used it to manage the land. Bison are known to seek out young grass in burn scars, while various birds species flock to forage in the opened spaces. Prescribed burns also clear away excess plant material while killing mature cedars and seedlings alike, reducing the risk of uncontrollable wildfire.

“A lot of people think all trees are good and removing them is bad,” said Sheldon Fletcher, a water quality coordinator for the Lower Brule Lakota Tribe. “But it’s not supposed to be forest here.”

Sheldon Fletcher, one of the founders of the River Breaks Prescribed Burn Association, and a burn he worked on the Lower Brule Reservation this year. Credit...Mikayla Whitmore for The New York Times, Sheldon Fletcher

Removing the trees is difficult. Many ranchers previously resorted to mechanically shearing them, a slow and expensive process that can scatter seeds. Shortly after one such attempt, Mr. Fletcher found saplings growing.

“We always joke that if you cut one big cedar tree, a hundred little ones will show up to the funeral,” said Shane Reis, a ranch owner and conservationist with the U.S. Department of Agriculture. Mr. Fletcher and Mr. Reis co-founded the River Breaks Prescribed Burn Association, which is the only one in the state that represents both tribal and nontribal land.

The economic benefits of burning are very convincing to ranchers, said Tom Hausmann, who works with the South Dakota State University Extension to establish burn associations in the state. That’s in part because more cattle can occupy fire-treated land without overgrazing. Thanks to a combination of shearing and prescribed fire, the rent value of his own land has doubled in 10 years.

Burn associations receive conservation funding, pool their resources and provide equipment to keep costs low for landowners. Experts employed at the university extension also provide free workshops, training and hands-on support to association members.

All of the associations in South Dakota require landowners to participate in at least one burn before scheduling one on their own land. Sean Kelly, a range field specialist at the extension said this step was essential.

The job of an association is to “educate landowners, so it can be rancher helping rancher, landowner helping landowner,” Mr. Kelly said. “This is not a for-hire service.”

Fires have to be conducted under the right conditions, and the burn season typically runs between March and May, when the moisture level in the trees is appropriate for burns and the surrounding vegetation is dormant. Landowners prepare months in advance by cutting association-approved firebreaks, which are perimeters mowed around the intended burn area to reduce flammable vegetation.

A training session at South Dakota State University's Oak Lake Field Station in 2023. Credit...Joe Dickie Photography

"There's a real science to it," said Daniel Johnson, Chairman of the Southeast Dakota Prescribed Burn Association, which began in 2023 and now has 25 members. Scheduled burns are canceled if weather conditions like wind and humidity aren't perfect.

Sparks or flames leaping beyond the intended burn zone can be disastrous. An estimated one in every thousand prescribed fires ends up escaping containment, according to the U.S. Forest Service.

Heather Hammerbeck is a fourth-generation rancher in Lyman County and a member of the Mid-Missouri River Prescribed Burn Association board. She was inspired to join

after participating in the 2023 burn on Ms. Grim's property but is still waiting for her own burn to be scheduled.

That's because the legal agreement allowing the group to perform prescribed burns on state-owned lands, which are ranched by many of the association's members, was revoked last year. The decision was made by the South Dakota Department of Public Safety and the state Game, Fish and Parks agency, which cited concerns about the complexity of the burns.

"Prescribed fire remains a highly effective tool for managing prairie landscapes," said Nick Harrington, the communications manager of South Dakota Game, Fish and Parks, in an email. Although restoring the agreement in its previous form would be in violation of state law, he said, the agencies intend to introduce legislation to create an exception that allows for prescribed fires when the burns align with the state's land management goals.

The association has halted most of their activities as the negotiations continue but Ms. Hammerbeck is still preparing for a burn on her land in the hopes of rescheduling one in the spring.

"It's not as sexy as saving the rainforests or saving the coral reefs, but grasslands are absolutely under attack, and they're an incredibly necessary biome," she said. "Fire is one of those things that we can do to help them."

New growth after a burn on the Grim Ranch in 2017. Credit...Joe Dickie Photography