

# Shaking it up: How sequence and seasonality affect the benefits of prescribed burns

Researchers from Grand Valley State University (GVSU) are including Big Rock Valley (BRV) in a study to see how variances in the season and sequence of prescribed burns could impact prairie and savanna restorations.

This is important because most land managers conduct prescribed burns in the spring, points out Todd Aschenbach, an associate professor of natural resources management at GVSU, who is leading the study. “Yet in our native landscape, natural fire would have occurred at different times of the year.”

“Most research on the ecological benefits of prescribed burns has focused on spring events, and a few studies exist on late summer and fall burns,” Aschenbach continues. “Yet little has been done to investigate what happens when burns are done with a change in their order.”

With that in mind, Aschenbach has established four research sites in western Michigan (including BRV) and one in southern Wisconsin. Each location has five 25-square-meter sections, with one plot designated as the control group and the other sections assigned to one of four burn treatments: Biennial spring burns, biennial late summer burns, a spring burn followed by a late summer two years later, and a late summer followed by a spring burn two years later.

Baseline data has been collected before any fire application. After each burn, Aschenbach’s team will identify all plant species and measure their cover. The researchers will gather data on not only individual species, but also groups of plant communities, such as warm-season grasses.



*Clockwise from left: Todd Aschenbach in BRV’s Parson’s prairie, the newest site to be added to his research study; working with Jay Suseland to cut burn breaks between plots; and an aerial view of the plots at BRV.*

Among objectives for this large-scale, long-term study are to see which fire treatment:

- Is most effective at reducing woody species and non-native invasive species, such as spotted knapweed, autumn olive, and multiflora rose.
- Is most effective at promoting native plant diversity.
- Results in the dominance or reduction of particular plant groups (e.g., grasses and forbs) — and how the order of burns will impact the plant community over time.
- Results in structure and composition that most closely match a high quality prairie or oak savanna.
- Is most effective at sequestering soil carbon (a long-term goal).

Aschenbach hopes to provide land

managers with a tool to achieve specific results, depending on their particular objectives. “Diversity begets diversity,” he says. “It’s easy to get in rut, but if you do something the same way all the time, you’re going to get the same results by favoring certain species and disfavoring others.”

“We know that spring burns allow warm-season grasses, such as big bluestem and Indian grass, to prosper because you’ve knocked back the competition,” Aschenbach continues. “Conversely, if you burn in the summer to knock back warm-season grasses, which can take up a lot of real estate, forbs will prosper because they’re getting more nutrients, water and sun. Yet what happens when you shift the season and order of fire application remains untested.”