# EFFECTS OF PRESCRIBED BURNING ON INVASIBILITY BY NONNATIVE PLANT SPECIES IN THE CENTRAL HARDWOODS REGION

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Fire often promotes invasion by nonnative plant species, yet few studies have examined this process in forests of the Central Hardwood Region. Public agencies are considering prescribed fire as a management tool to favor the regeneration of oak (*Quercus spp*.) in this region, raising the possibility of widespread invasion of forests by nonnative species. To examine the potential role of burning in facilitating invasions, we set up an experiment simulating various aspects of forest fires at a forested site in southeastern Ohio. Treatments included high- and low-burn intensity, increased soil pH, litter removal, and a control. Seeds of two problematic nonnative species (*Microstegium vimineum* and *Rosa multiflora*) were sown experimentally following application of the treatments. Treatments were arranged in a randomized block design in two landscape positions (dry upland and moist lowland) and two canopy conditions (gap, no gap). We measured germination, stem height, leaf number, and seed production at four time intervals throughout the growing season. Germination rate was promoted by litter removal, and high- and low-intensity fire treatments for *M. vimineum*, and by high-intensity fire for *R. multiflora*. In both species, stem height and leaf number were greatest following high-intensity fire and under canopy gaps. We suggest that prescribed burning creates a disturbance suitable to invasion. Removal of leaf litter seems to be the most important factor controlling germination of our experimental species, while overall site quality (light and moisture) is most important for seedling survival. Growth and reproduction of both species were highest in the hot burn treatments, indicating that the most severe disturbances have the greatest effect on the invasibility of deciduous forests. We infer that the absence of invasion in previous studies is due to a lack of propagules rather than the unsuitability of the burned site for germination or growth.

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