

Oak Seedling Response to Fire and Herbivory

A.S. Adams and L.K. Rieske

University of Kentucky, Department of Entomology, Lexington, KY 40546

We manipulated arthropod and mammalian herbivory levels on white oak seedlings using a combination of insecticide applications and fencing, and employed a split-split-plot design to assess the impact of single- and multiple-year burns on seedling growth over a two year period. Herbivory levels increased over time on all sites, but there was no significant difference in herbivore pressure on seedlings in single-year, multiple-year, and non-burned plots. Insecticide treated seedlings (+I) suffered less herbivore pressure than did non-insecticide treated seedlings (I)($P < 0.0001$), and mammalian herbivory was significantly reduced by the presence of a fence (+F)($P < 0.01$). Seedling relative height growth, shoot elongation, diameter growth, and specific leaf mass were greatest on once-burned sites, intermediate on twice-burned sites, and least on non-burned sites. Bud expansion was the only seedling performance parameter unaffected by burn treatment. We found differences in herbivory levels due to insecticide application, suggesting that the arthropod component was the more significant aspect of overall herbivory levels, but this herbivory did not impact seedling performance, and seedling performance parameters were more closely linked to mammalian herbivory. These results suggest that prescribed fire may be a practical component of a management program designed to enhance oak regeneration.

Prescribed Burning: Effects on Forest Bird Populations

Vanessa L. Artman

*Department of Evolution, Ecology, and Organismal Biology, 1735 Neil Avenue,
Ohio State University, Columbus, OH 43210*

Prescribed burning is being applied on an experimental basis in southern Ohio to restore and maintain oak-dominated forests. Effects of prescribed burning on bird communities have been given little consideration in previous research, but are of concern because long-term declines have been observed for many bird species within the region. My research addresses short-term changes in population levels and nesting productivity of forest bird species. Bird species diversity did not change as a result of burning, but population levels of three species, the hooded warbler, ovenbird, and worm-eating warbler, declined in burned areas. As expected from the reduced population levels, fewer active nests were found in burned areas than in unburned areas, but there were no differences in rates of nesting success between treatments. Predation of nest contents was the primary factor influencing the likelihood of nesting success. A wide variety of nest predators inhabit the forests, including snakes, squirrels, raccoons, and other birds, and their foraging tactics are so variable that nest predation events tend to be unpredictable. Prescribed burning did not appear to affect the array of nest predators in the community or the susceptibility or exposure of eggs or nestlings to these predators.