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Interactions between prescribed fire and regeneration insects in southern pine beetle - killed forest stands

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Shortleaf pine regeneration following southern pine beetle mortality can be impacted by herbivore pressure on young seedlings. We assessed feeding damage on seedlings and herbivore activity in three southern pine beetle killed shortleaf pine stands that had received a prescribed fire treatment and compared it to unburned controls to determine if prescribed fire altered herbivore pressure or insect seasonal activity. Herbivores of concern include regeneration weevils (*Hylobius pales* and *Pissodes nemorensis*), the Nantucket pine tip moth (*Rhyacionia frustrana*), conifer sawflies (Hymenoptera: Diprionidae), and the pine webworm (*Tetralopha robustella*). Seedling feeding damage by regeneration weevils, tip moths and conifer sawflies did not differ between the burned and unburned plots. Only pine webworms showed a significant difference in seedling attacks between treatments, with frass nests appearing on a greater percent of naturally regenerating seedlings in the burned plots. In contrast, conifer sawflies were found in greater densities in the unburned plots. There were no differences in the density of regeneration weevils or tip moths found in the burned and unburned plots. Seasonal activity peaked in mid April for *H. pales* and late March for *P. nemorensis*, and tip moth activity peaked in early April. Peak activity for the conifer sawflies occurred in early July. No suitable baits exist to trap pine webworm and we were unable to monitor its seasonal activity. Our results indicate that the use of prescribed burning for site prep can affect herbivore pressure, and this should be taken into consideration when planning shortleaf pine reforestation.

Keywords: pine regeneration, shortleaf pine, herbivore, seasonal activity, regeneration insects