

# Herpetofauna Response to Fire and Imazapyr in Intensively- managed Mid-rotation Pine Stands in Mississippi

**Raymond B. Iglay**, *Department of Wildlife, Fisheries and Aquaculture, Mississippi State University, Box 9690, Mississippi State, MS 39762*

**Bruce D. Leopold**, *Department of Wildlife, Fisheries and Aquaculture, Mississippi State University, Box 9690, Mississippi State, MS 39762*

**Darren A. Miller**, *Southern Timberlands Technology, P.O. Box 2288, Weyerhaeuser NR Company, Columbus, MS 39704*

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*Abstract:* Forest managers are increasingly expected to incorporate conservation of biodiversity in forest management plans, but a paucity of information exists regarding herpetofauna responses to mid-rotation release practices of dormant-season prescribed fire and herbicide in intensively-managed pine (*Pinus* spp.) stands. However, these management tools have demonstrated capabilities of improving conservation value in southeastern pine forests. Therefore, we investigated herpetofauna responses to factorial combinations of dormant-season prescribed fire and imazapyr using a randomized complete block design of six mid-rotation pine stands with four experimental units to which we applied at random one of four treatments (e.g., burn only, herbicide only, burn + herbicide, control). We captured 814 reptiles and 3,699 amphibians of 17 and 16 species, respectively, using drift fence arrays during May and June 1999–2007. Herpetofauna communities only differed among treatments in 2002 between burn + herbicide and control plots. Species-specific responses were limited to differences across years within treatments and greater northern fence lizard (*Sceloporus undulates hyacinthinus*) relative abundance in burned or herbicide treated sites soon after treatment. Furthermore, herpetofauna associations with measured environmental variables (e.g., vegetation structure and biomass and trap site characteristics) did not indicate treatment influenced fluctuations in species relative abundances. Observed herpetofauna responses coincide with past studies. Forest managers using dormant season prescribed fire with or without imazapyr will most likely have minimal effects on herpetofauna communities, but current knowledge gaps require additional research to better understand mechanisms of species abundance and persistence in these landscapes.

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