

# REINTRODUCTION OF FIRE FOR FUEL REDUCTION AND FOREST RESTORATION IN FIRE-EXCLUDED LONGLEAF PINE (*PINUS PALUSTRIS*)

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## ABSTRACT

Horseshoe Bend National Military Park (HOBE) recently initiated forest restoration that required reintroduction of fire after 50+ years of no burning. Lack of burning plus past logging altered forest composition, structure, and fuel. Longleaf forests are naturally open-canopied and support a grassy groundcover with little midstory and few hardwood trees. Frequent fires top-kill non-longleaf stems, consume most available litter resulting in little duff formation, and maintain the characteristic forest structure. Due to fire exclusion, HOBE currently supports excessive hardwoods; litter depths reach 10 cm and duff sometimes exceeds 6 cm. In frequently burned longleaf stands, duff formation is rare. At other fire-excluded sites, reintroduction of burning has often resulted in smoldering duff that eventually kills longleaf pine, although mortality may not be evident for 2–4 years post-burn. This excess fuel also creates safety hazards, especially smoke on nearby highways, and threatens to negate the value of residual longleaf for ongoing forest restoration. Reintroduction of fire began in 2006. Prior to the burn, bases of most longleaf were soaked with approximately 200 L of water. Prescriptions targeted litter but not duff consumption, using low-severity fire with short residence time. Initial results appear successful and little duff was consumed around soaked trees while some untreated trees were damaged by smoldering. Unfortunately, soaking was time-consuming plus pumper units will not always be available to apply water and so a raking treatment was tested in 2007. This activity is also time-consuming but can be implemented by non-fire crew personnel. Data collection is ongoing, but preliminary information indicates that raking decreases likelihood of duff ignition but may be less effective than soaking. Current thought is that duff at the base of some adult trees may need to remain for the near future and that areas within seed dispersal distance, suitable for longleaf regeneration, may be important sites to target for duff consumption. In addition, management units without residual longleaf may be burned under more extreme conditions to promote duff consumption. Although this approach will not eliminate all hazard fuel, it may fragment the duff layer, confine much of it to small areas, and perhaps make the hazard easier to manage. We thank D. Loveland and NPS regional prescribed fire crews plus staff members of Horseshoe Bend National Military Park for their support and contributions to our work. The project has been funded, in part, by the National Park Service, National Fish and Wildlife Foundation, and the Southern Company.

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