

# RESOURCE MANAGEMENT OF LISTED SPECIES IN SCRUB VEGETATION

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## ABSTRACT

Sand pine scrub tends to burn with a high fire intensity under extreme weather conditions, thus exhibiting uncontrollable and unpredictable behavior. However, the flora and fauna of these xeric pinewoods are perpetuated by intense fires, once every 20 to 60 years. In modern times, fire suppression and habitat fragmentation have reduced the frequency of fire in this environment. This has adversely affected scrub vegetation, especially the population levels of many endangered and threatened species adapted to this community. To re-create the role of fire, a modified fuel model was developed as a way to increase safety under controlled burning conditions. Our objective was to refine this model and other nonburning techniques for various size parcels of scrub. A special research focus of the study was on the four-petal pawpaw, *Asimina tetramera*, a federally endangered plant. By testing various resource management techniques and monitoring listed species, we should be better able to judge the effects of fire and alternate methods to perpetuate the remaining parcels of this endangered community.

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# PREDICTING AND MANAGING POSTFIRE MORTALITY IN SOUTH FLORIDA SLASH PINES

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## ABSTRACT

South Florida slash pine (*Pinus elliotii* var. *densa*), a key tree species in upland Florida ecosystems, exhibits widely varying postfire mortality. We examined the relationships of its postfire mortality with the interacting factors of beetle infestation, fire intensity, season, burn size, vegetation type and structure, and locally dominant vegetation. Data from 24 fires over 3 years were collected. Fires on previously burned sites killed fewer trees (44%) than fires on long-unburned sites (71%). In a path analysis linking 9 variables at 4 levels, pine survival was most affected by season of burn, with fall burns decreasing survival indirectly through increases in fire intensity. Char height was the second most important variable, mainly exerting direct negative effects on survival. Larger burns, more *Platypus* beetles, hickory scrub or flatwoods dominance, and complete needle consumption were associated with high mortality. The final path model explained over 90% of the variation in pine survival and detailed many complex interactions. Both preburn and fire intensity data were needed to explain over 75% of the variance. Fire management to minimize pine mortality is feasible, but management for landscape heterogeneity will tolerate variation in fire intensity and pine mortality.

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