

Bugaboo Fire

Preliminary Fire Behavior Assessment Report



Pinhook Swamp

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Fire Behavior Assessment Team***

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Fire Behavior and Suppression Through Treated Areas

On May 19, 2007 the Bugaboo fire crossed from the Okefenokee Wildlife Refuge into the northern edge of the Osceola National Forest. As it entered the northern edge, it entered into an untreated area and then one to two miles to the south into an area treated with prescribed fire in 2006. This occurred in the afternoon with weather conditions of **(insert information from weather stations)**. The fire increased in intensity and spread rapidly throughout the afternoon and evening moving south and southwest. Intensity and spread rates remained high as the fire moved from areas treated with prescribed fire in 2006 into areas untreated. During the late evening at approximately 11pm it entered into areas with numerous prescribed fire treatment units, some treated as recently as February of this year. Fire behavior moderated as it moved into this area because of slightly cooler and more humid nighttime conditions, but also apparently because of the treated areas. The treated areas were used successfully during nighttime suppression burn operations to safely create a large swath of burned ground that stopped the fire. In several units treated with prescribed fire in February of this year, the effects of the treatments in aiding suppression were particularly evident. In at least three different locations, the fire crossed into these units but only sustained themselves as small fingers and then were readily extinguished by themselves or with the aid of limited suppression resources.

The importance of the areas treated with prescribed fire in aiding suppression are magnified by the amount of available suppression resources. With so many large fires burning simultaneously, suppression resources were very limited but the Osceola Ranger District Fire staff were able to contain the fire with limited staff.

Evidence from Post-Fire Survey

Over seventy-five plots were placed in the area burned by the Bugaboo Fire to gather quantitative evidence on the ground of the differences in fire behavior and effects. Plots were placed throughout a variety of areas in the fire—areas burned during the day and night, and through units treated with prescribed fire 6 months, 1 year, 3 years, and 4 years ago as well as untreated areas.

Plots were randomly placed, primarily along roads. As much as possible, the effect of roads on fire behavior was avoided. Plots were located at least 50 feet in from the roads and often 100 or 150 feet.

In each plot, information was collected on tree crown scorch or consumption, understory vegetation consumption and litter/duff consumption. Pre-fire conditions were not available and therefore the estimates of consumption of the

vegetation and litter/duff were based on height and diameter or depth and amount of char remaining. The top height of crown scorch and consumption were measured and the bottom height of the live crowns (crown base height) was inferred based on branch location and condition. The condition of scorched crown and evidence of fire behavior such as needle freeze was also noted.

For this preliminary survey, each plot was given a broad severity rating based primarily on overstory tree effects (Table 1). Ratings ranged from low severity, with little to no evidence of crown scorch, to very high severity with complete or nearly complete needle consumption in the crowns. These overstory crown effects were generally related to understory vegetation consumption. More detailed analysis of these relationships is underway.

Table 1. Severity rating levels applied to each plot.

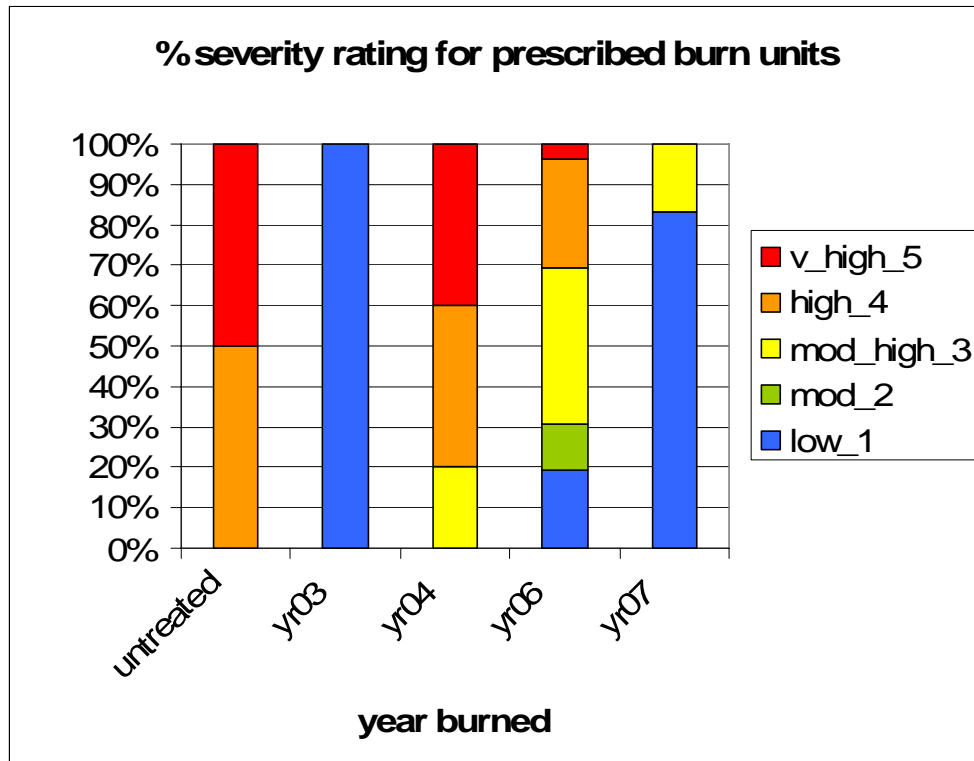
Severity code	definition
1	little, no crown effects
2	low scorch (brown needles)
3	heavy needle scorch (red needles, no freeze)
4	Very heavy needle scorch (red needles) & freeze
5	heavy needle consumption

Preliminary Findings of Field Survey

Separating out the effect of treatments, the time of day the fire burned through a site and suppression tactics is not straightforward but some overall trends are readily apparent (Figure 1). Pending statistical analysis, these apparent trends are described below.

Areas that had not had any recent treatments had the highest severity levels. These areas also burned during the afternoon when weather was most conducive to more intense fire behavior—hotter and drier. Areas treated with prescribed fire in 2003 all burned as low severity. This is most likely because they burned at night during a fire suppression burn operation. Sites treated with prescribed fire in 2004 burned earlier in the evening, with the fire progressing into them rapidly with high intensity. Most of these sites burned with very high and high intensity. Areas treated with prescribed fire in 2006 occurred both in the northern portion of the District (Pinhook swamp area) and the southern portion. The northern portion burned during the day when it was hotter and drier and the southern portion at night. The areas that burned at night had low to moderate severity effects. The areas to the north had a variety of fire behavior and effects. Although 30% burned as high or very high severity, the majority burned as moderate to moderate/high severity. The treatments had an apparent effect of moderating fire behavior. The trees in these areas burned with moderate or moderate/high severity are likely to survive. The results for areas treated with prescribed fire in 2007 show that over 80% of the sites burned with lower

severity. These sites burned at night and primarily during burn operations, both of which can reduce fire behavior. However, more telling was the fact that in two of these units treated in 2007, the fire stopped within 30 to 100 feet from the road. These slop overs burned as relatively small fingers that were not very wide.



Untreated



Areas not recently treated with prescribed fire. Burned during the day with high intensity fire.

Treated with Prescribed Fire in 2003



Unit treated with prescribed fire in 2003. Burned through the site at night, part of suppression burn operations.

Treated with Prescribed Fire in 2066



Areas treated with prescribed fire in 2066, where wildfire passed through during the day and early evening as high intensity fire.



Area treated with prescribed fire in 2006, at south end of fire. Fire burned through at night.

Treated with Prescribed Fire in 2007



Finger of fire extending into unit burned in 2007, that stopped just beyond the photo, extending no more than 100' into the unit.



At lower end of unit burned in 2007, burned as part as part of burn operation to stop the fire.