GEORGIA FORESTRY COMMISSION

Wildfire Damage Assessment for the 2007 Big Turnaround Fire

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Background: On April 16, 2007 a wildfire began approximately three miles east of the City of Waycross and this was the beginning of the largest wildfire in Georgia's history. This fire quickly spread south and southeasterly and eventually entered the Okefenokee Swamp National Wildlife refuge. Long term drought and extreme fire weather conditions resulted in limited control, and a lightning strike several weeks later in the southern part of the Swamp resulted in a separate fire which burned northward in the swamp (and eventually joined the fire to the north) as well as southward into Florida. Ware, Clinch and Charlton Counties all have sections of this massive wildfire within their boundaries. Efforts continue to contain the fire within the Swamp and suppress all remaining portions of the fire that are outside the refuge area.

An initial assessment was made by the Georgia Forestry Commission on the first portion of the fire (nicknamed the "Big Turnaround") to determine fire severity and possibly predict survival of the damaged stands. Based upon previous research done in the 1960's, 1980's and 1990's on wildfires in Florida, stands were rated for damage into one of three categories: light, moderate, and severe. Although you would automatically assume that pine bark beetles automatically play a decimating role following fires of this magnitude, this has not always been the case as documented in the research in the 1990's (Hanula, Meeker, Barnard, et al.). The 1980's research conducted by Dixon (et al.) did indicate an increase in ips engraver beetles for up to two growing seasons following an April wildfire. Perhaps the one thing we know for sure is that catastrophic wildfires coincide with long term drought – both of these factors causing tree stress, decline of growth and mortality. There are many factors to look at when assessing fire impacts and pine bark beetles were only one of these. Some of the other stand factors that were observed were: stem char and severity, crown consumption and scorch, appearance and damage of growing shoots (if present), basal stem damage, root damage and overall appearance of the stands.

Survey Methods: Wildfires burn with different levels of intensities: throughout the day (depending upon the time of day), from day-to-day (depending upon the local and regional weather patterns) and burn in different fuels in vastly different ways. These variations result in a mosaic of burn patterns across the landscape and that vary within each stand and from section to section. Effort was made to classify each stand surveyed for its overall appearance and damage levels, and it should be noted that this is not an exact science but rather an overall indicator or forest health. Future weather patterns will play a major role in tree survival in marginal areas with particular emphasis on rainfall throughout the remainder of the growing season of 2007.

The fire burned through most areas sampled 4-6 weeks previously, and evaluations were made primarily along travel corridors in an effort to get a reliable sample and make some worthwhile observations and predictions. A great deal of timber salvage is already being done but this is only a small percentage of what needs to take place.

Survey Findings

Damage Estimates:

- Severe - 52%
- Moderate - 15%
- Light - 33%

Stands rated as severe had extreme damage and a significant portion of the trees are already dead or will not likely survive this growing season.

Moderate stands had significant damage but a portion of the trees likely survive this growing season. The resulting stand, however, may not be fully stocked and some landowners should liquidate these areas.

Light stands had relatively minor damage and a majority of the trees within these areas will survive. Some mortality likely has or will occur within these areas also, but will be relatively minor and no management action should occur due to the fire activity.

Overall: A mortality rate of 60-70% could be applied to this fire as a good estimate.

Product Class:

- Premerchantable - 27%
- Pulpwood - 37%
- Chip-n-Saw - 25%
- Sawtimber - 3%
- Hardwood Drain - 8%

Almost all areas other than Hardwood Drains were pine plantations, so the above product classes refer to one of the pine species listed below.

Species:

- Loblolly Pine - 23%
- Slash Pine - 64%
- Longleaf Pine - 3%
- Hardwood/Cypress - 10%

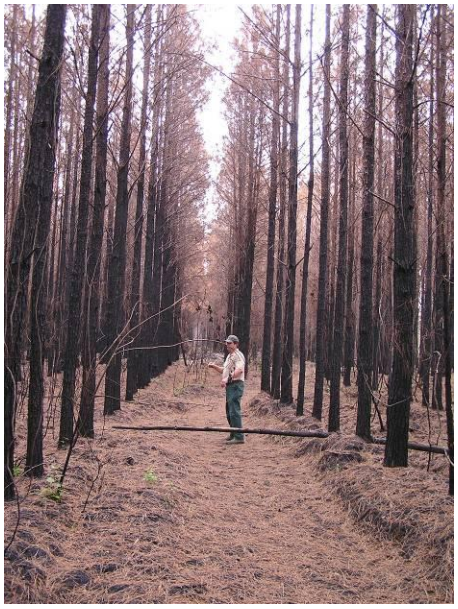
No records were kept on land ownership since it was almost impossible to determine on most tracts, but a significant portion of this fire is owned by forest industry.

Variation in Fire Damage: within timber stands and across the landscape…

Severe fire activity and crown consumption can be seen in the black areas.

Browned needles indicate crown scorch and less severe damage.

Green canopy indicate the lowest levels of damage (if little to no basal stem or root damage occurred).



Stand at left – one month post burn. Stem char is approximately 50%, crown scorch is close to 100%. This stand would be rated as "severely" damaged and note that when all the needles fall, the potential for another burn exists.

Younger stands tended to suffer more severe damage if they were greater than 3 years old (4 year old stand at right)

Longleaf stands suffered minimal damage compared to Loblolly or Slash plantations of similar age.

Stands that had heavy fuel build up around the bases of trees (left) experienced long burn periods that may have damaged the stem bases. This has been indicated as a mortality factor in the past also.