



Redbay: The Alive, The Dead, The Ugly

Laurie Reid¹ and James Johnson²



The Problem

In 2004, an exotic ambrosia beetle (*Xyleborus glabratus* Eichhoff, Figure 1) and a previously undescribed fungus, *Ophiostoma* sp. (Figure 2,3), were found in dead and wilting redbay trees (*Persea borbonia* (L.) Spreng.) in South Carolina and Georgia (Fraedrich, 2005). To date, *X. glabratus* and the *Ophiostoma* sp. fungus have been consistently recovered from dead and wilting redbay trees in 7 South Carolina counties, in 15 Georgia counties, and 8 Florida counties (Figure 4). It is believed that *X. glabratus* transmits the *Ophiostoma* sp. fungus which is responsible for the redbay wilt disease symptoms and the eventual mortality of the infested redbay trees.



Figure 1. *Xyleborus glabratus* (Eichhoff)



Figure 2. Fungus in galleries.



Figure 3. *Ophiostoma* sp.

The Project Goals

Through vegetative surveys and sampling of dying redbay trees, we hope to delineate the range of the redbay wilt disease (thus, the range of *X. glabratus* and the *Ophiostoma* sp. fungus) in South Carolina and Georgia. Additionally, other trees in the Lauraceae family, such as sassafras (*Sassafras albidum* (Nutt.) Nees), the federally endangered pondberry (*Lindera melissifolia* (Walt.) Blume), and the state threatened pondspice (*Litsea aestivalis* (L.) Fern.) will be monitored for wilt and mortality.

The Survey Methods: South Carolina and Georgia

In each county with redbay, 1/10 acre plots are taken on a 10 mile grid. At each plot, the surveyor walks a 330 foot transect (beginning at a redbay tree) and records healthy, flagging, and dead redbay trees within 13.2 feet of the transect. Wilting redbay or other lauraceous trees in counties that have not tested positive for the beetle and/or fungus are sampled and sent to Steve Fraedrich (Plant Pathologist, USFS) for fungus identification.

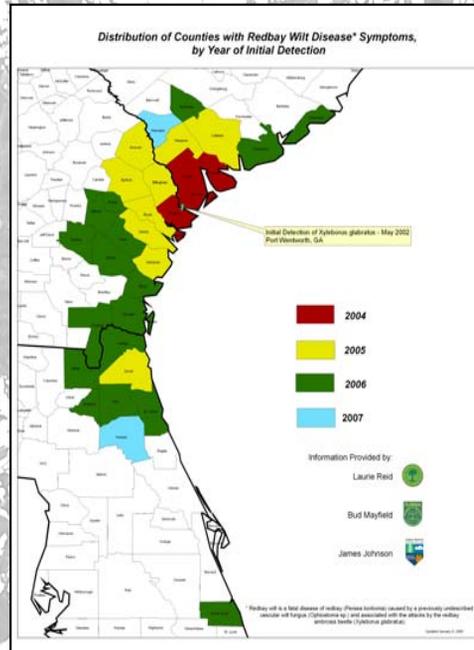


Figure 4. Distribution of Counties with Redbay Wilt Disease Symptoms.

The Results: South Carolina

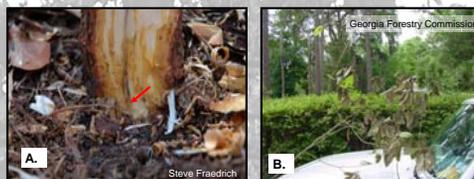
To date, eight counties have been surveyed and 47 plots have been taken; 32% of trees were dead, 41% of trees exhibited flagging, and 27% were healthy (Table 1). Mortality at each plot was recorded as light (0-33% dead trees), moderate (34-66% dead trees) or heavy (67%+ dead trees) (Figure 5). Plots will continue to be surveyed through spring 2007.

Table 1. Redbay mortality survey of eight South Carolina counties.

County	# Plots	% Dead	% Flagging	% Healthy
Allendale	4	13	62	26
Bamberg	5	21	28	51
Beaufort	5	78	15	7
Charleston	6	18	57	25
Colleton	11	29	49	22
Dorchester	6	6	37	57
Hampton	4	55	38	7
Jasper	6	81	16	3
Totals	47	32	41	27



Figure 5. Redbay mortality plot survey of eight South Carolina counties.



A. Redbay with beetle entry and fungus staining. B. Sassafras with wilt disease (Georgia). C. *Litsea aestivalis* (Georgia). D. Sassafras with wilt disease (Georgia).

The Results: Georgia

Formal survey is currently in progress and should continue until spring 2007. To date the *Ophiostoma* sp. wilt fungus has been found in: 15 counties - redbay mortality (Figure 4), 2 counties - sassafras mortality (Liberty and McIntosh), 1 county - pondberry and pondspice mortality (Effingham).



¹ South Carolina Forestry Commission, lreid@forestry.state.sc.us

² Georgia Forestry Commission, jjohnson@gfc.state.ga.us

Acknowledgements: USFS Evaluation Monitoring Funding, Steve Fraedrich (USFS), Bob Rabaglia (USFS), Bud Mayfield (FL DOCS), Andy Boone (DendroDiagnostics Inc, SC), Jessie Beck and Chip Bates (GA Forestry Commission)

