



**Laurel Wilt Website**  
**R. Scott Cameron**  
**Laurel Wilt Working Group**

**Laurel Wilt Conference**  
**Savannah, GA**  
**February 27, 2009**



# Objectives

- Laurel Wilt Working Group
  - What is it?
  - What's it accomplished?
  - What's its status?
- Laurel Wilt Website
  - Who set it up?
  - How to access it?
  - What's on it?



# Laurel Wilt Working Group

- Mission/Structure

- Modeled somewhat after the SOD Task Force
- Operating guidelines, Steering Committee, & Sub-committees set up in 2007
- Objectives:
  - Provide a mechanism for communication
  - Identify critical issues and research needs
  - Consolidate and disseminate technical and educational information



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# Laurel Wilt Working Group Steering Committee

- **Chairperson:** Don Duerr, USDA Forest Service, Forest Health Protection
  - **Coordinator:** Scott Cameron, Georgia Forestry Commission (temporary)
  - **Science Advisor:** Tom Harrington, Iowa State University
  - **Special Advisor:** Bruce Fraedrich, Bartlett Tree Research Laboratories

## Subcommittees:

- **Disease Cycle - Chair:** Steve Fraedrich, USDA FS Research
- **Monitoring and Survey - Chair:** Bob Rabaglia, USDA, FS, FHP
- **Impact (Economic & Ecological) - Chair:** Laurie Reid , SC For. Comm.
- **Regulation - Chair:** Wayne Dixon, Division of Plant Industry
- **Management - Chair:** James Johnson , Georgia Forestry Commission
- **Education/Outreach - Chair:** Bud Mayfield, Division of Forestry
- **Research - Chair:** Jim Hanula, USDA, FS, Research



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# Laurel Wilt Working Group

- Accomplishments
  - Steering Committee meetings/teleconferences/emails
  - Endorsed “Opportunities for Reducing the Spread and Impact of LW Disease” (10/07)
  - Circulated a list of research needs
  - Developed, and continues to expand, the Laurel Wilt Website
- Current Status – Lack official authority and funding
  - Ad hoc
  - Support for the Laurel Wilt Website
- Acknowledge USFS and GA, FL, and SC state forestry agencies for great progress with limited resources



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# Laurel Wilt Website

- Hosted by the USDA Forest Service, FHP, Southern Region
- Content developed by the LWWG members
- 2007 Redbay Symposium presentations provided much of the original foundation
- Access
  - <http://www.fs.fed.us/r8/foresthealth/laurelwilt/index.shtml>
  - Google™ - “**laurel wilt**”



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## Laurel Wilt

Laurel wilt is a deadly disease of redbay (*Persea borbonia*) and other tree species in the Laurel family (Lauraceae). The disease is caused by a fungus (*Raffaelea lauricola*) that is introduced into host trees by a non-native insect, the redbay ambrosia beetle (*Xyleborus glabratus*). The fungus plugs the water-conducting cells of an affected tree and causes it to wilt. Laurel wilt has caused widespread and severe levels of redbay mortality in the Southeastern coastal plain. Click on the links below for more information.

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 <a href="#">Seed Collection</a>	 <a href="#">Wood Movement Issues</a>	 <a href="#">Host Identification</a>

- ### Major Contributors
- Don Duerr - Oversight
  - 2007 Redbay Symposium
  - Bud Mayfield
  - James Johnson
  - Steve Fraedrich
  - Jim Hanula
  - Scott Cameron

**Web site (technical)**  
**Anthony Elledge**  
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## Laurel Wilt - Latest Updates...

- [2009 Laurel Wilt Conference - Savannah, Georgia, February 26-27](#)
- [Manuka Oil and Phoebe Oil are Attractive Baits for \*Xyleborus glabratus\* \(Coleoptera: Scolytinae\), the Vector of Laurel Wilt](#) (PDF, 334 KB)
- [Disease Notes: California Laurel is Susceptible to Laurel Wilt Caused by \*Raffaeles lauricola\*](#)
- [Georgia Laurel Wilt Report 2006-2008](#)
- [Effect of Propiconazole on Laurel Wilt Disease Development in Redbay Trees and on the Pathogen In Vitro](#) (article from Arboriculture & Urban Forestry) (PDF, 228 KB)
- [Biology and Host Associations of Redbay Ambrosia Beetle](#) (PDF, 160 KB)
- [Florida Department of Agriculture and Consumer Service Commissioner's Spotlight: Radio Report About Laurel Wilt](#) (MP3, 930 KB)
- [New species description of the laurel wilt pathogen](#) (PDF, 420 KB)
- [Laurel wilt pest leaflet](#) - Florida Department of Agriculture and Consumer Services, Division of Forestry (PDF, 2.2 MB)

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## Laurel Wilt

### Symptoms

Trees diseased with laurel wilt initially exhibit drooping foliage with a reddish or purplish discoloration. This discoloration may occur in a portion the crown at first, but gradually the entire crown wilts and reddens. The foliage eventually turns brown and may remain on the branches for up to a year or more.



*Left: Redbay with partially wilted crown. Right: Same tree eight months later (Photos by A. Mayfield, Florida DACS Division of Forestry).*

Stem cross sections and removal of bark from wilted trees reveals a dark, blackish discoloration in the sapwood. The extent of this discoloration or stain (a response of the tree to the fungal infection) varies depending on how long the tree has been infected.



*Left: Bark removed to show black discoloration on the sapwood surface of a redbay diseased with laurel wilt. Right: Sapwood discoloration shown in a stem cross-section (Photos by A. Mayfield, Florida DACS Division of Forestry).*



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*Left: Bark removed to show black discoloration on the sapwood surface of a redbay diseased with laurel wilt. Right: Sapwood discoloration shown in a stem cross-section (Photos by A. Mayfield, Florida DACS Division of Forestry).*

In the early stages of disease, a wilting redbay may not show any obvious signs of ambrosia beetle attack. Early attacks are inconspicuous and may happen on branches in the crown or on the stem. Eventually, as the tree dies from fungal infection and is colonized by more ambrosia beetles, toothpick-like tubes or piles of fine sawdust may be observed on the bark. This dust is produced by the redbay ambrosia beetle as well as other species of ambrosia beetles that colonize the dead tree.



*String of compacted ambrosia beetle sawdust on redbay (Photo by A. Mayfield, Florida DACS Division of Forestry).*

### Additional Information

- [Laurel Wilt: Signs and Symptoms on Redbay](#) - Stephen Fraedrich, USDA Forest Service (PDF, 1 MB)

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# Signs and Symptoms of Laurel Wilt on Redbays

- Rapid wilting of trees
- Sapwood discoloration
- Reddish to purplish brown discoloration of foliage

Stephen Fraedrich  
USDA Forest Service  
Athens, GA

Fort Georgia Island, FL (October, 2005)

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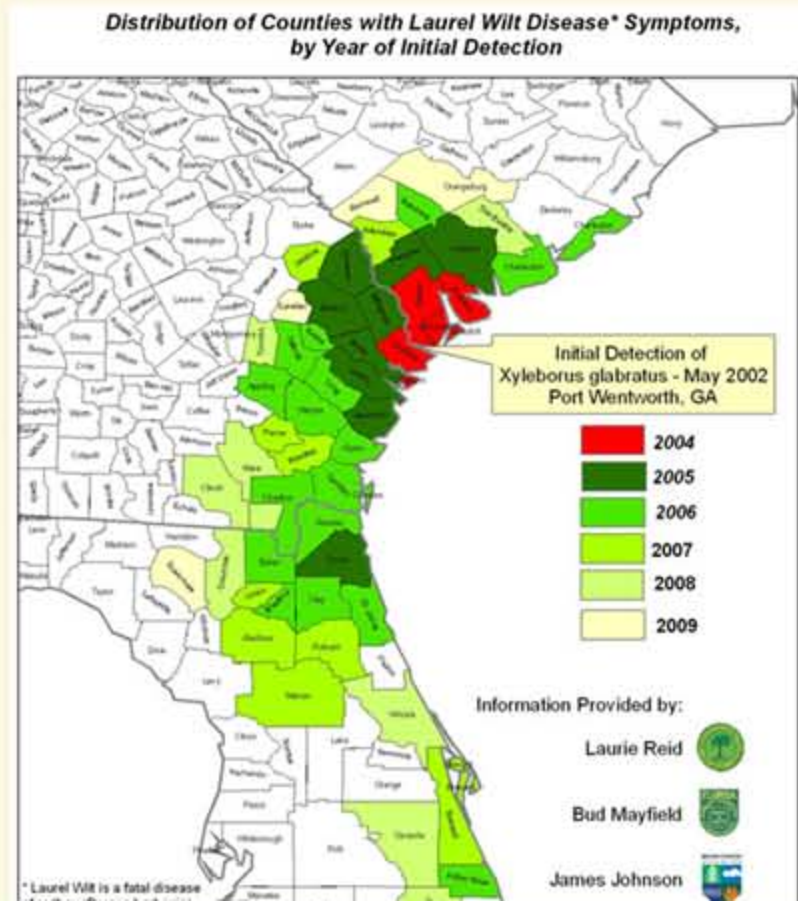
## Laurel Wilt

### Distribution Map

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The map below depicts the counties in which laurel wilt has been observed, by year of initial detection.

Last Update: February 2009



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- ▶ [Pest Alerts and Extension Publications](#)
- ▶ [Research and Scientific Journal Publications](#)
- ▶ [Other Publications](#)
- ▶ [Unpublished Surveys and Reports](#)

### Pest Alerts and Extension Publications

- Mayfield, A.E. III, 2008. [Laurel wilt](#). Florida Department of Agriculture and Consumer Services, Division of Forestry, Forest and Shade Tree Pests Leaflet No. 13. 2 p. (PDF 22 KB)
- Mayfield, A.E. III, Crane, J.H., and Smith, J.A. 2008. [Laurel Wilt: A Threat to Redbay, Avocado, and Related Trees in Urban and Rural Landscapes](#). University of Florida, Institute of Food and Agricultural Sciences Extension, Document HS-1137, 6 p.
- Mayfield, A.E. III, and Thomas, M.C. 2006. [The redbay ambrosia beetle, Xyleborus qlabratus, Eichhoff \(Scolytinae: Curculionidae\)](#). Florida Department of Agriculture and Consumer Services, Division of Plant Industry Pest Alert.
- [Pest Alert: Don't Transport Redbay Firewood](#) (poster). Florida Department of Agriculture and Consumer Services, Division of Forestry.

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### Research and Scientific Journal Publications

- Fraedrich, S.W. "[Disease Notes: California Laurel is Susceptible to Laurel Wilt Caused by Raffaelea lauricola](#)." [Plant Disease](#) 92.10 (2008): 1469.
- Fraedrich, S.W., Harrington, T.C., Rabaglia, R.J., Ulyshen, M.D., Mayfield A.E. III, Hanula, J.L, Eickwort, J.M. and Miller, D.R. 2008. "[A fungal symbiont of the redbay ambrosia beetle causes a lethal wilt in redbay and other Lauraceae in the southeastern United States](#)." [Plant Disease](#) 92.2 (2008): 215-224.
- Hanula, J.L, Mayfield, A.E. III, Fraedrich, S.W., and Rabaglia, R.J. "[Biology and Host Associations of the Redbay Ambrosia Beetle, \(Coleoptera: Curculionidae: Scolytinae\), Exotic Vector of Laurel Wilt Killing Redbay Trees in the Southeastern United States](#)." [Journal of Economic Entomology](#) 101.4 (2008): 1276-1286. (PDF, 160 KB)
- Hanula, J.L. and Sullivan, B. "[Manuka Oil and Phoebe Oil are Attractive Baits for Xyleborus qlabratus \(Coleoptera: Scolytinae\), the Vector of Laurel Wilt](#)." [Environmental Entomology](#) 37

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## Laurel Wilt

### Frequently Asked Questions

[Where did the redbay ambrosia beetle and laurel wilt fungus come from?](#)

[How did they get here?](#)

[Where has laurel wilt been found?](#)

[How long have this insect and disease been in the U. S. ?](#)

[What types of trees are affected?](#)

[What are the symptoms?](#)

[How can I confirm that my tree was infected by the laurel wilt fungus?](#)

[What does the redbay ambrosia beetle look like?](#)

[Are there other ambrosia beetles that attack redbay?](#)

[What is the life cycle of the redbay ambrosia beetle?](#)

[What is the laurel wilt disease cycle?](#)

[How does this insect and disease spread?](#)

[How big of a problem is this disease causing?](#)

[What are the ecological concerns associated with this disease?](#)

[What can be done to stop or slow the spread and impact of this disease?](#)

[How can I get more information about the redbay ambrosia beetle and laurel wilt?](#)

#### Where did the redbay ambrosia beetle and laurel wilt fungus come from?

The redbay ambrosia beetle is native to Asia (including India, Japan, Myanmar and Taiwan). The fungus is believed to have arrived with the beetle and is probably Asian in origin as well.

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#### How did they get here?

Like many other non-native wood-boring beetles, the redbay ambrosia beetle likely arrived in solid wood packing material (SWPM), such as crates or pallets. SWPM is routinely used to ship goods internationally, but these materials can harbor unwanted wood-inhabiting pests if they are not properly treated before export.

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#### Where has laurel wilt been found?

Laurel wilt has been found at an increasing number of locations in the southeastern coastal plain of South Carolina, Georgia and Florida. See the [Distribution Map](#) page for a depiction of counties in which the disease has been detected.

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## Laurel Wilt

### Photo Gallery

Illustrations included in the Laurel Wilt Photo Gallery are organized into six major categories. Click on the links below to view thumbnail images in each category or sub-category. Click on individual thumbnails to view enlarged photos. The "High resolution image" link in the lower right corner on many images will take you to the [Bugwood Network](#) where more detailed photos can be viewed.

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- [Ambrosia beetles](#)
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## Laurel Wilt - Photo Gallery

### Disease Symptoms - Redbay, *Persea borbonia*



[Redbay black streaks in sapwood](#)



[Redbay stump sprouts](#)



[Redbay black streaks in sapwood](#)



[Redbay epicormic stem sprouts](#)



[Redbay dead and dying trees](#)



[Redbay black streaks in sapwood](#)



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## Laurel Wilt - Photo Gallery

### Disease Symptoms



Redbay



*Persea borbonia*

[High Resolution Image](#)

Redbay (*Persea borbonia*) mortality on Jekyll Island caused by laurel wilt disease

Photography by Ronald F. Billings, Texas Forest Service, College Station, TX

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#### laurel wilt

Sordariomycetes > Ophiostomatales > Ophiostomataceae  
*Raffaelea lauricola* Harrington & Fraedrich

**Host:** redbay  
*Persea borbonia* (L.) Spreng.

**Photographer:** Ronald F. Billings, Texas Forest Service, United States

**Descriptor:** Symptoms

**Description:** Redbay mortality on Jekyll Island caused by laurel wilt disease.

**Image taken in:** Jekyll Island, Georgia, United States

**Image Citation: (?)** Ronald F. Billings, Texas Forest Service, Bugwood.org

**Image Use: (?)** You must attribute the work in the manner specified (but not in any way that suggests endorsement). You may not use this work for commercial purposes unless permission is granted by the photographer or copyright owner.

#### Available Images Resolutions:

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laurel wilt

Genus: *Raffaelea*

Family: Ophiostomataceae

# Forest Health Protection, Southern Region

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Laurel Wilt Home

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Forest Health Protection  
Region 3  
1720 Peachtree Road, NW  
Room 316 N  
Atlanta, GA 30308

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## Laurel Wilt

Laurel wilt is a deadly disease of redbay (*Persea borbonia*) and other tree species in the Laurel family (Lauraceae). The disease is caused by a fungus (*Raffaelea lauricola*) that is introduced into host trees by a non-native insect, the redbay ambrosia beetle (*Xyleborus glabratus*). The fungus plugs the water-conducting cells of an affected tree and causes it to wilt. Laurel wilt has caused widespread and severe levels of redbay mortality in the Southeastern coastal plain. Click on the links below for more information.

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## Laurel Wilt - Posters and Presentations

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### Posters

- [An Ophiostoma Species and Xyleborus glabratus Threaten Redbay \(Persea borbonia\) and Other Members of the Lauraceae in the Southeastern USA](#) - Stephen W. Fraedrich, USDA Forest Service, Thomas C. Harrington, Iowa State University, and Robert J. Rabaglia, USDA Forest Service. [149 KB]
- [Laurel Wilt: A New disease Threatening Redbay and other Trees in the Lauraceae](#) - Albert E. Mayfield III, Florida Division of Forestry; Stephen W. Fraedrich, USDA Forest Service; James Johnson, Georgia Forestry Commission; Laurie S. Reid, South Carolina Forestry Commission; Jason A. Smith, University of Florida. [120 KB]

### Presentations

**Note:** The following abstracts and slideshows dated 1/19/2007 were presented at the Redbay Symposium held on Jekyll Island, January 18-19, 2007.

### History and Distribution

- [Redbay Ambrosia Beetle and Laurel Wilt in Georgia: History and Summary of Activities - January 2007](#) - James Johnson, Georgia Forestry Commission, 1/19/2007 ([Abstract](#), 43 KB) ([Slideshow](#), 2.8 MB)
- [Redbay Ambrosia Beetle and Laurel Wilt in Florida's Forests](#) - Albert E. Mayfield, III, Florida Division of Forestry, 1/19/2007 ([Abstract](#), 12 KB) ([Slideshow](#), 4.4 MB)

# Conclusions

- Laurel Wilt Working Group
  - Ad hoc. Committee
  - Vehicle for communication
  - **Support the LW Website**
- Laurel Wilt Website
  - Excellent resource
  - Serves as an important communication center
    - Post 2009 LWC posters and presentations
  - Populate the Photo Gallery
    - [Send your best photos to Forestry Images](#)
  - Fill in gaps and keep update
- **Life after laurel wilt**



Cameron  
Laurel Wilt Conference  
February 27, 2009  
Savannah, GA