

Laurel Wilt and the Redbay Ambrosia Beetle, *Xyleborus glabratus*



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Overview

- Laurel Wilt affects redbay (*Persea borbonia*), an important species for coastal wildlife and avocado (*Persea americana*), an important subtropical world crop.
- The disease is associated with an exotic ambrosia beetle (*Xyleborus glabratus*) and caused by a fungus (*Raffaelea lauricola*).
- Symptoms and signs of the disease include wilted foliage, vascular discoloration, and sawdust tubes.
- The disease has been detected in Georgia, North Carolina, South Carolina, Florida, Alabama, and Mississippi.
- Other members of the Lauraceae family known to be affected by the disease in the field include: sassafras (*Sassafras albidum*), swamp bay (*Persea palustris*), pondspice (*Litsea aestivalis*), pondberry (*Lindera melissifolia*), and camphor (*Cinnamomum camphora*).



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Redbay

Persea borbonia



Image credit:
Gary Wade, University of Georgia



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Redbay

Persea borbonia



Image credit:
Ann Murray, University of Florida



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Redbay

Persea borbonia



Image credit:
James Johnson, Georgia Forestry Commission, www.bugwood.org, #2110024



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Raffaelea lauricola




The fungal
pathogen
on APDA at
2 weeks

Image credit:
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Redbay ambrosia beetle

Xyleborus glabratus

- Exotic beetle from Asia
- Native hosts include:
 - Lauraceae
 - *Phoebe lanceolata*, *Lindera latifolia*, *Litsaea elongata*
 - Fagaceae
 - *Lithocarpus edulis*
 - Fabaceae
 - *Leucaena glauca*
 - Dipterocarpaceae
 - *Shorea robusta*



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Redbay ambrosia beetle

Xyleborus glabratus



Female



Male

Image credit:
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Redbay ambrosia beetle

Xyleborus glabratus



Female



Male



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Image credit:

Jeffrey Lotz, Florida Department of Agriculture and Consumer Services, Division of Plant Industry



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Redbay ambrosia beetle

Xyleborus glabratus

Eggs laid by the female.



Larvae in tunnels

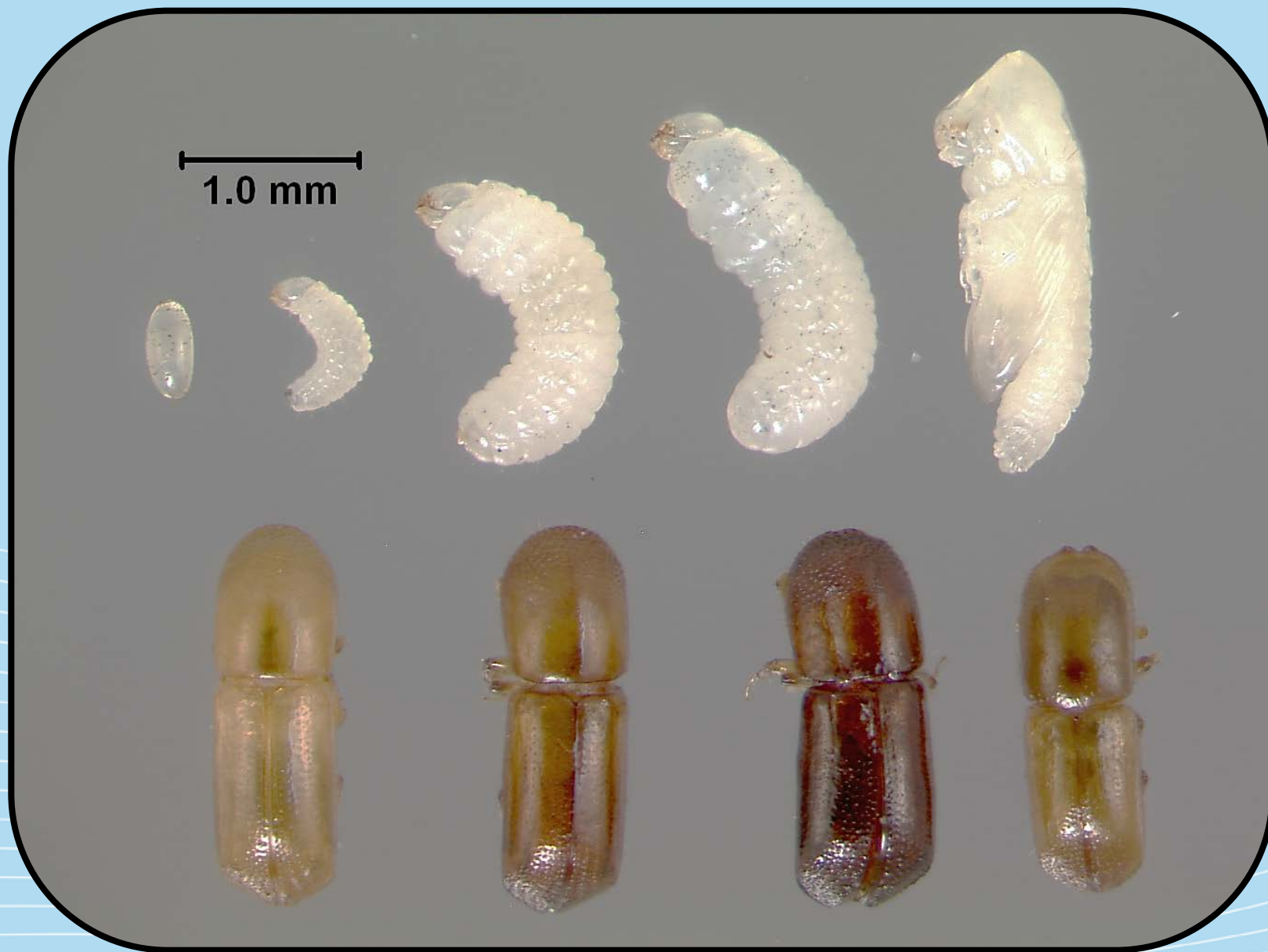


Image credit:
Lyle Buss, University of Florida



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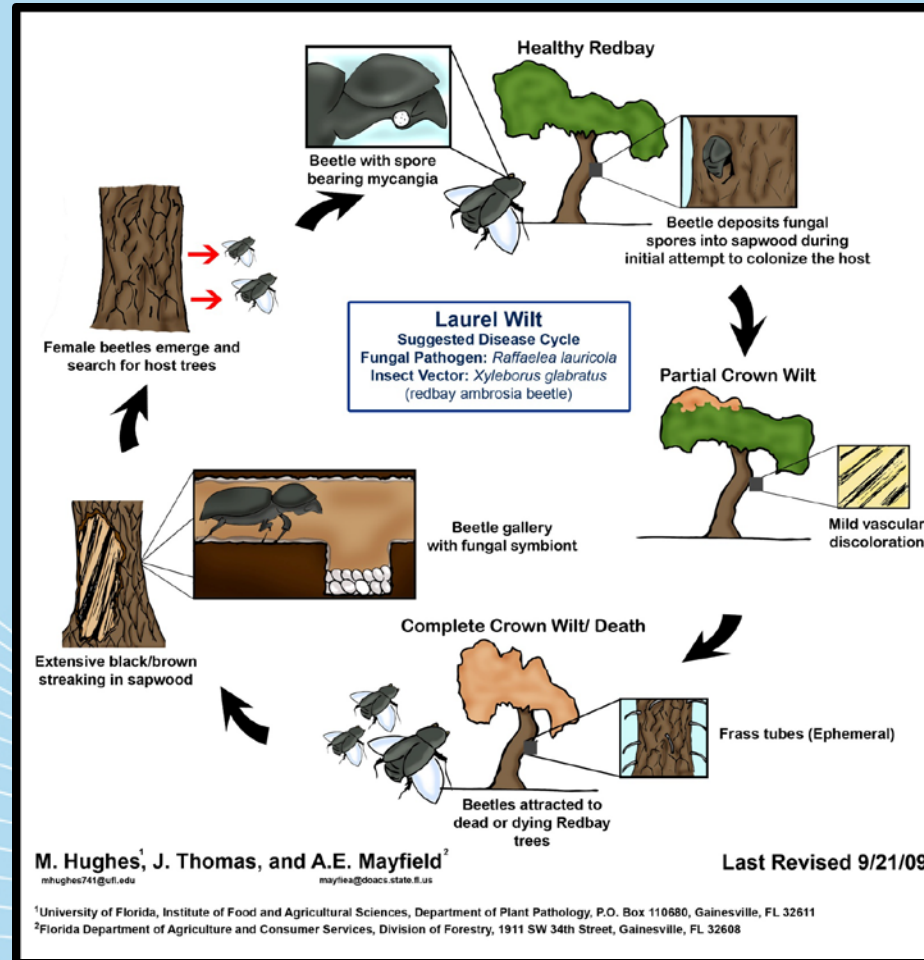
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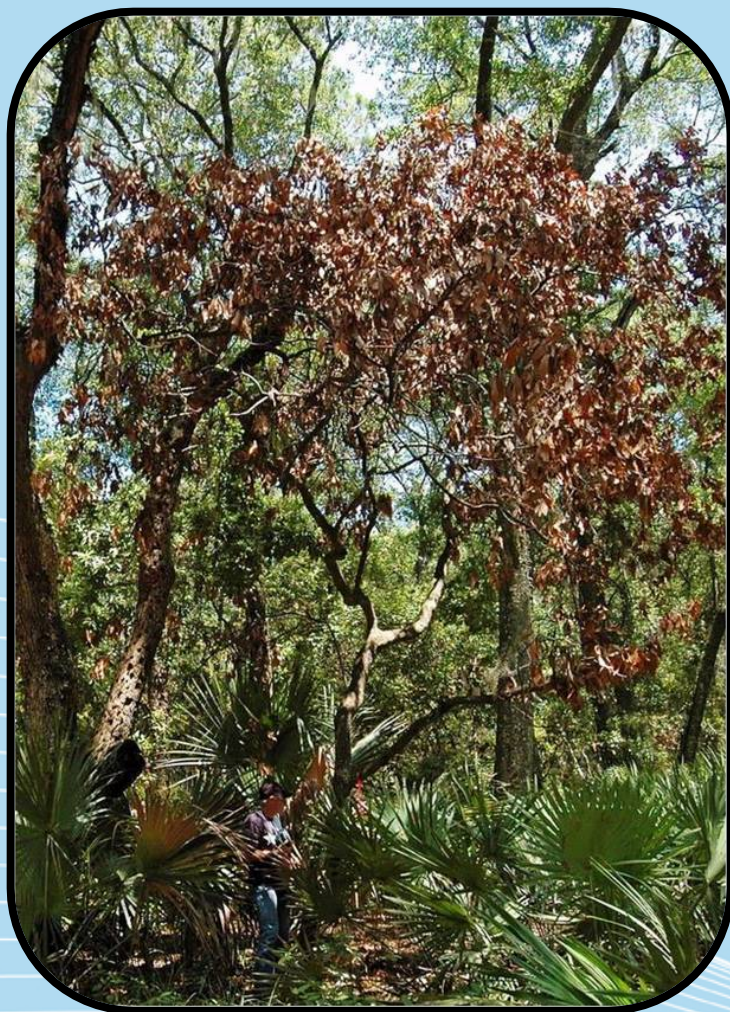
Disease Cycle



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Symptoms of the Disease



Click [here](#) to view video of symptoms.

Image credit:

Left: Ronald F. Billings, Texas Forest Service, www.bugwood.org, #5383213

Right: A. Mayfield, Florida Department of Agriculture and Consumer Services, www.bugwood.org, #2199084



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Signs of the disease and its vector



Click [here](#) and [here](#) to view video of signs of the disease and its vector.

Image credit:

Top left: Albert (Bud) Mayfield, Florida Department of Agriculture and Consumer Services, www.bugwood.org, #2199086

Bottom left: James Johnson, Georgia Forestry Commission, www.bugwood.org, #2109039

Right: Albert Mayfield, Florida Department of Agriculture and Consumer Services, www.bugwood.org, #2199082



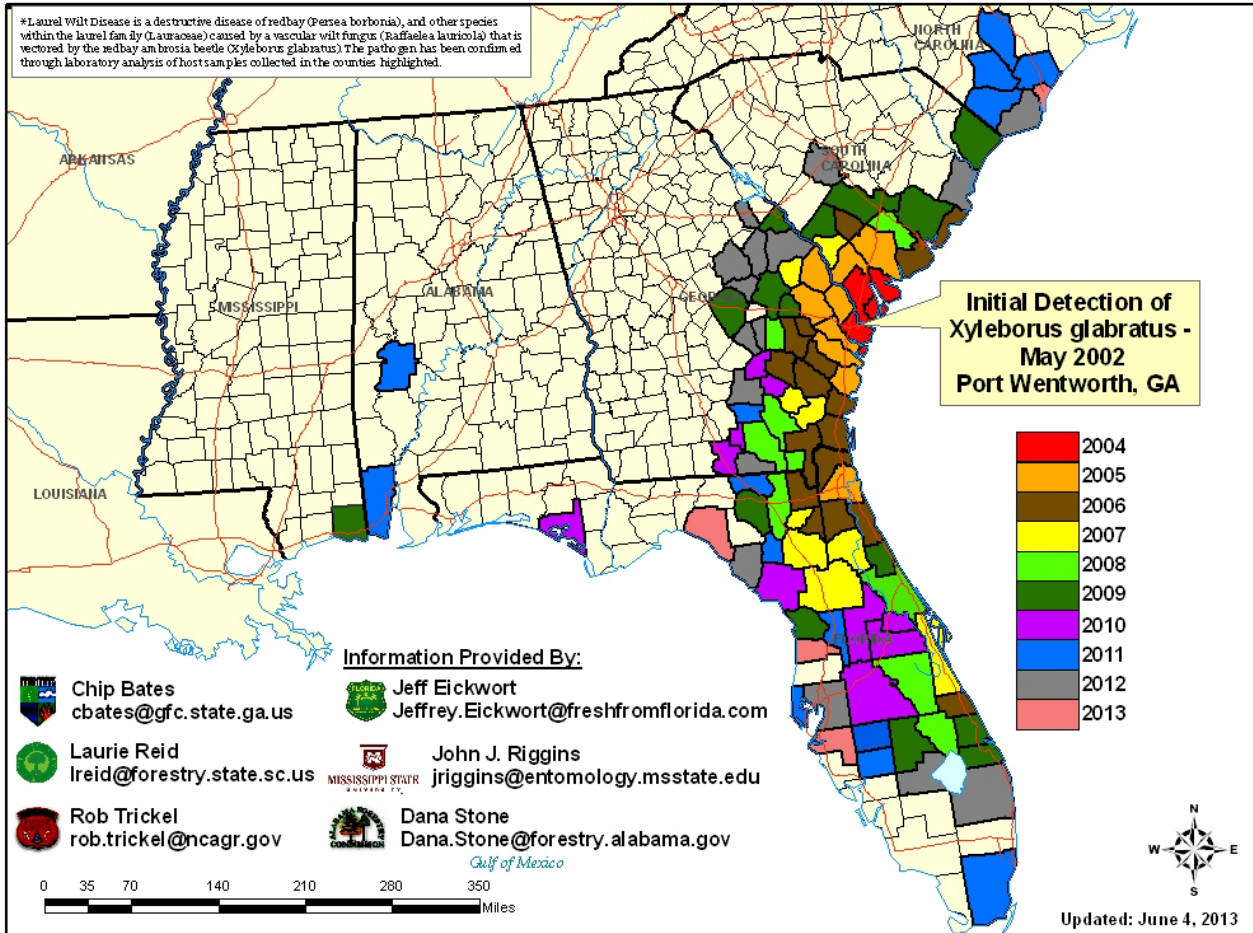
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Distribution in the US

Distribution of Counties with Laurel Wilt Disease* by year of Initial Detection

*Laurel Wilt Disease is a destructive disease of redbay (*Persea borbonia*), and other species within the laurel family (Lauraceae) caused by a vascular wilt fungus (*Raffaelea lauricola*) that is vectored by the redbay ambrosia beetle (*Xyleborus glabratus*). The pathogen has been confirmed through laboratory analysis of host samples collected in the counties highlighted.



Six states have confirmed the disease as of July 2013:
South Carolina, North Carolina, Georgia, Alabama, Florida, and Mississippi.

Map provided by U.S. Forest service July 2013 -
http://www.fs.fed.us/r8/foresthealth/laurelwilt/dist_map.shtml



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Impact



Image credit:
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Pondspice

Litsea aestivalis

Image credit:
James Johnson, Georgia Forestry Commission, www.bugwood.org, #5383220



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Sassafras

Sassafras albidum

Image credit:

Chris Evans, River to River CWMA, www.bugwood.org, #1330066 (left) and Pennsylvania Department of Conservation and Natural Resources - Forestry Archive, www.bugwood.org, #5021088 (right)



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Pondberry

Lindera melissifolia - a
federally endangered species

Image credit:
James Henderson, Gulf South Research Corporation,
www.bugwoo.org, #1241197 and #1241196



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Swamp bay *Persea palustris*

Image credits:

Left: Chris Evans, River to River CWMA, www.bugwood.org, #1378123

Top: Rebekah D. Wallace, www.bugwood.org, #5428185



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Camphor

Cinnamomum camphora

Image credits:

Left: James H. Miller, USDA Forest Service, www.bugwood.org, #1539077

Top: Forest & Kim Starr, Starr Environmental, www.bugwood.org, #5287054



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California laurel

Umbellularia californica

Image credit:
David L. Magney, David Magney Environmental Consulting,
permission via email.



Spicebush

Lindera benzoin

Image credits:
Chris Evans, River to River CWMA, www.bugwood.org, #5427457
and #1334063



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Avocado

Persea americana



Image credit:
Florida Department of Agriculture and Consumer Services, Division of Plant
Industry



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Management

- Correct identification of the pathogen (and its vector) are of paramount importance in any management of a disease
- There are several barriers to the treatment of this disease
 - The beetle is a powerful flier
 - By the time symptoms appear, the beetle has likely infected many trees in the area
 - Pesticide use against the beetle is not recommended due to the numerous off-target species that would be affected
 - Biological controls are not known at this time
 - Human movement of infested plant material is aiding the long-distance spread of the vector.
- The suggestions made for treating or halting the spread of this disease are based on similar treatments for wilt diseases of other trees.



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Lindgren Funnel Trap
baited with manuka oil or
phoebe oil are used to trap
the redbay ambrosia
beetles.

Image credit:
Andrew Derksen, Florida Department of Agriculture and
Consumer Services, www.bugwood.org, #5429489



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You can help

- Submit samples to your NPDN laboratory if you see a wilted canopy, entry holes, and dark streaking under the bark.
 - Submit fresh 1-2 inch pieces of sapwood with the streaking, taken from about chest-high on the affected tree. Place the pieces in a zip-top bag and keep the bag cool (cooler or refrigerator) until it can be delivered to the laboratory via overnight or 2-day mail service.
 - Click [here](#) to view video.
- Remind people not to transport mulch, firewood, etc.
- Direct questions to the Forest Health Protection site:
<http://www.fs.fed.us/r8/foresthealth/laurelwilt/index.shtml>



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Additional Sources of Information

- USDA Forest Service, Forest Health Protection, Southern Region
 - <http://www.fs.fed.us/r8/foresthealth/laurelwilt/index.shtml>
- Florida Department of Agriculture and Consumer Services, Division of Plant Industry
 - http://www.doacs.state.fl.us/pi/enpp/pathology/laurel_wilt_disease.html



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Questions?

- For more information, check out www.protectingusnow.org
- You can also contact:
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