

Laurel Wilt in Miami-Dade County

*Jonathan H. Crane, Tropical Fruit Crop
Specialist*

*University of Florida, IFAS
Tropical Research and Education
Homestead, FL 33033*

What is laurel wilt

- Laurel wilt is a fungal pathogen carried (vectored) by the redbay ambrosia beetle.
 - The beetle and fungus have a symbiotic relationship
- The insect was introduced into the US in 2002 and has subsequently spread to South Carolina, Georgia, Florida, and Mississippi.
- Laurel wilt is spreading in Florida.
- The beetle attacks trees in the Lauraceae (Laurel Family).
- Laurel wilt is capable of killing trees in the Lauraceae (e.g., redbay, swampbay, avocado, etc.).

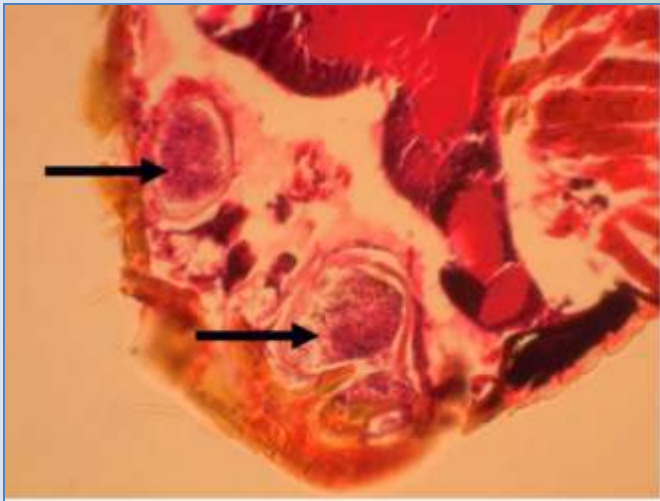
Redbay ambrosia beetle (RAB) (*Xyleborus glabratus*)

- Very small (~2 mm in length), brown-black colored, cylinder shaped
- Female beetles - most common and can fly; males – not common and cannot fly
- The RAB carries spores of the laurel wilt pathogen (LW: fungus) in special mouth pouches called mycangia
- Beetles bore into the wood just below the bark and form galleries in the sapwood

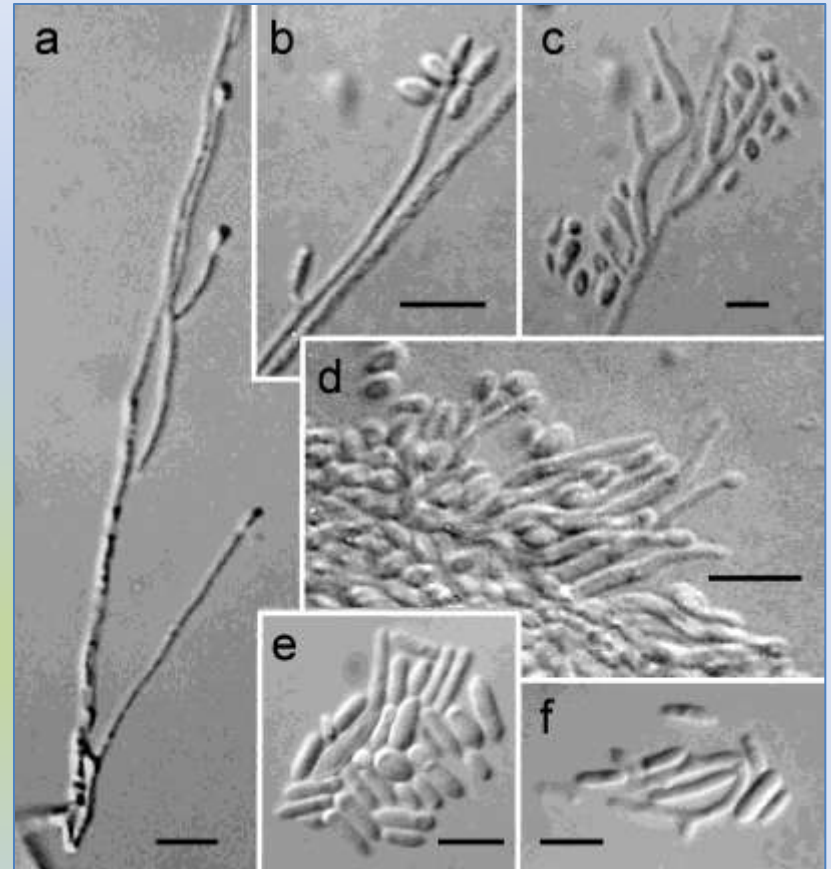


Photo credits: M.C. Thomas, FDACS.

Laurel Wilt Pathogen (LW) (*Raffaelea lauricola*) An exotic fungus



Mouth pouches on the beetle (mycangia) with LW spores. Photo credit: Mike Ulyshen, USDA Forest Service.

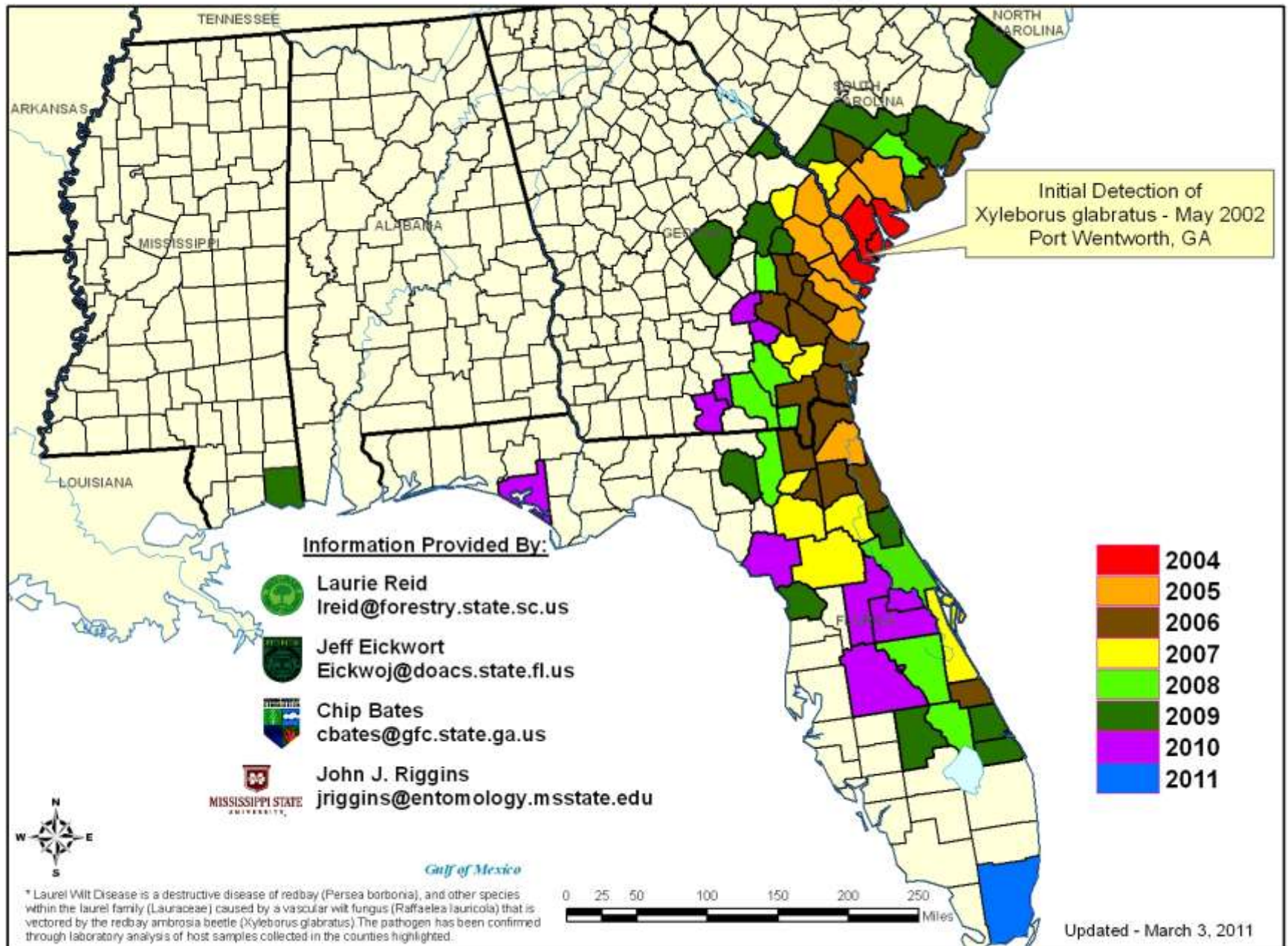


The laurel wilt pathogen

- The adult beetles and their larvae feed on the fungus. Photo credit: S. Fraedrich, USDA Forest Service.

Laurel wilt positive states (South Carolina, Georgia, Florida, and Mississippi) and Florida counties

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

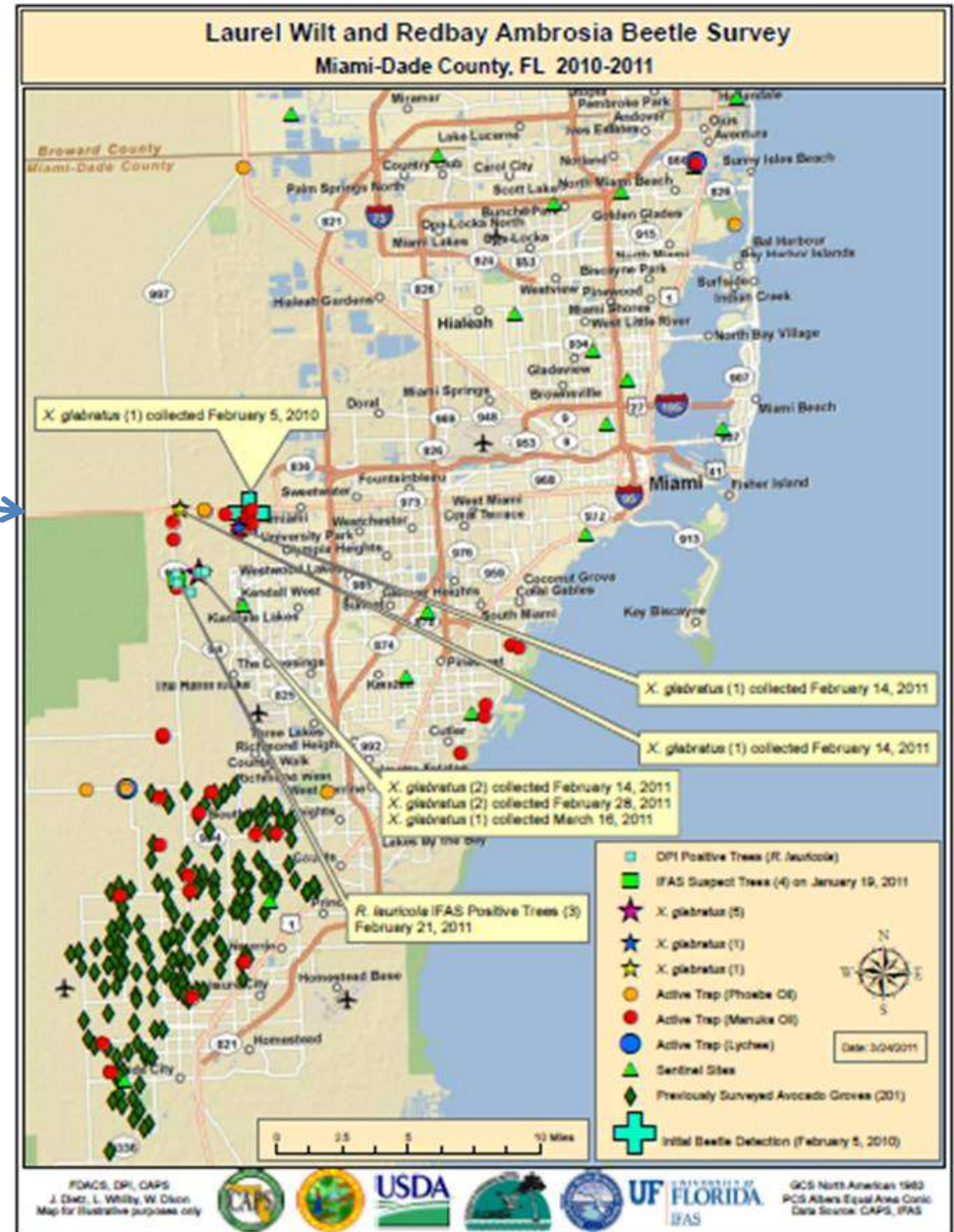


The current situation

- Three swampbay (*Persea palustris*) trees were sampled February 1, 2011.
- Between mile marker ~20 and 21 on east side of Krome Avenue.
- Samples were sent to 3 laboratories
 - DPI, Gainesville
 - J. Smith, UF-SFRC
 - R. Ploetz, UF-TREC
- Visual – CSMA selective augur - symptoms
- Molecular testing
 - PCR amplification
- Koch's postulates
 - Inoculate container-grown 'Simmonds' avocado trees with isolates from suspect trees
- All 3 laboratories agree the tests prove laurel wilt is in Miami-Dade County
- Subsequently 7 redbay ambrosia beetles were trapped in the same area by mid-March 2011.

Location of the LW positive swampbay trees in Miami-Dade County

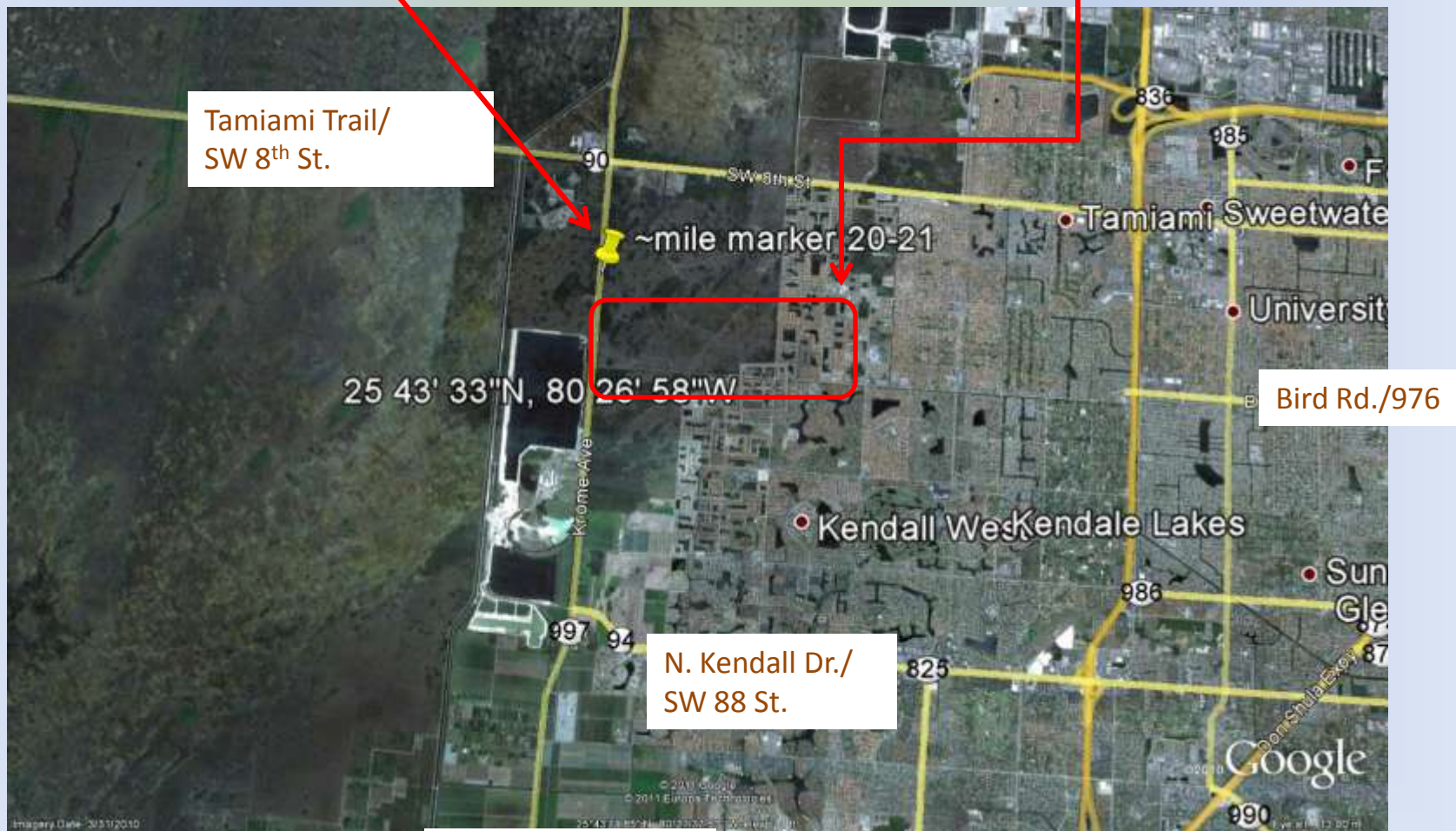
Tamiami Trail/
Rt. 41/SW 8th St.



General location of LW positive swamp bay trees

LW positive swampbay trees

Area of suspect swampbay trees



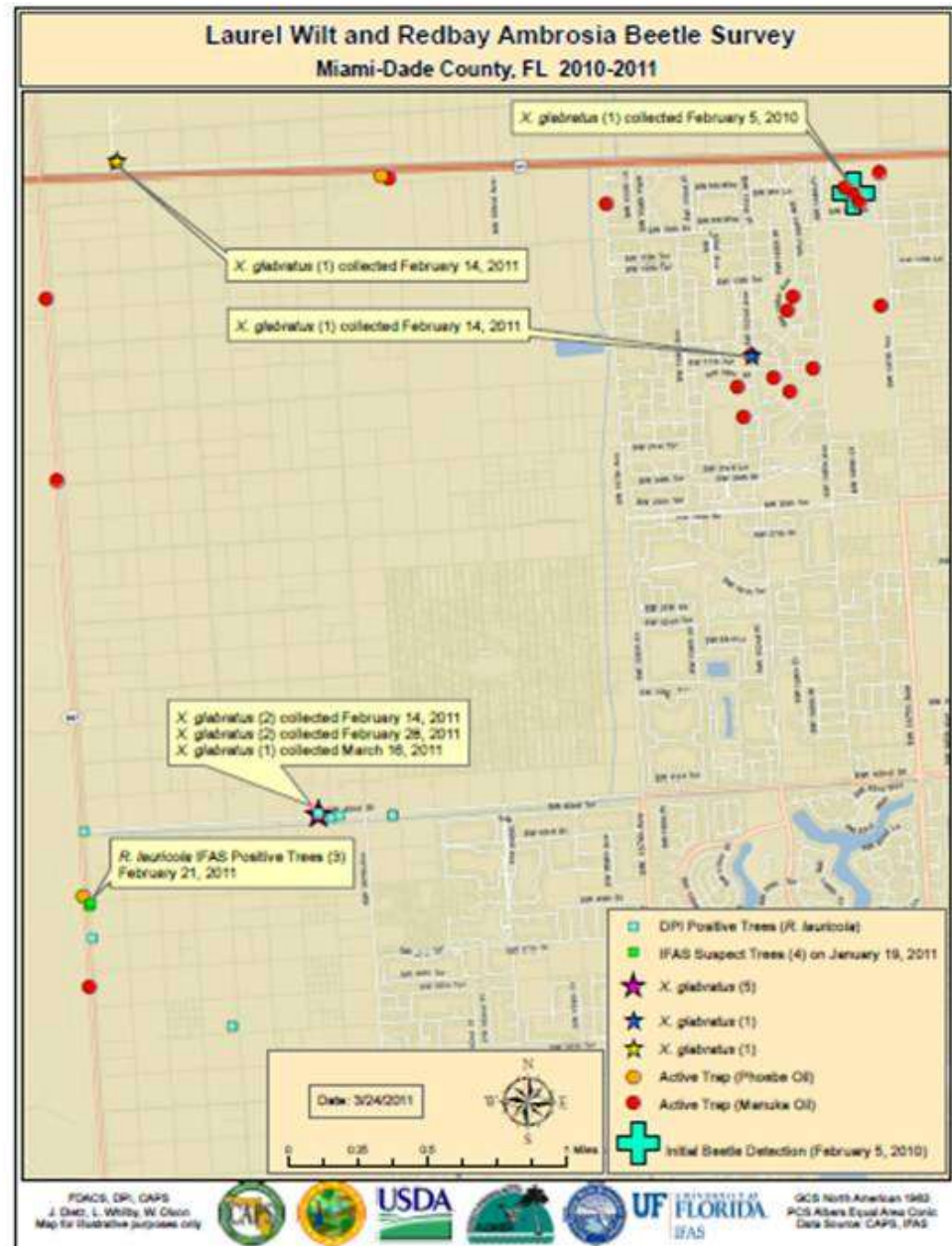
Tamiami Trail/
SW 8th St.

Bird Rd./976

N. Kendall Dr./
SW 88 St.

Krome Avenue/
SW 177 Ave./997N

Current DPI RAB trap locations and finds



LW spread

- Redbay ambrosia beetle (RAB) flight
- RAB infested wood and trees
- Infested wood products:
 - Firewood
 - Mulch
 - Limbs and stumps of cut trees
 - Illegally dumped infested wood
 - Infested trees in Lauraceae

FDACS-DPI response plan

- Working with SFWMD
 - Helicopter survey of area
- DPI ground truth suspects
- DPI to changed to sticky traps
 - Appear more effective
 - Verify vector presence
 - Access RAB population density
- Commercial landscape and arborists and nurseries
 - Contact DPI
- Urban residents
 - Contact DPI
 - Samples go to DPI
- Outreach
 - Commercial industries
 - Urban residents

Identification

- Identification of LW
 - Proper sampling (see handout)
 - Submission of samples – verification of the disease
 - Native trees – send to DPI or TREC Diagnostic Lab
 - Avocado trees – send to DPI or TREC Diagnostic Lab
 - After diagnosis then the decision on action

Healthy swampbay



Symptoms of laurel wilt (*Raffaelea lauricola*)

- Leaf and young stem wilting
- Leaf color change from green to dark green, bluish-green, to greenish brown to brown.
- Dead leaves hanging on the tree.
- Stem and limb dieback.
- Commonly sections of the tree show symptoms and other sections do not. Eventually the whole tree shows symptoms.
- Dark black or bluish black streaks in sap wood.

Swampbay along SW 42 St. canal (off of SW 162 Ave.)



★ = dying tree

Symptoms of ambrosia beetle (*Xyloborus glabratus*) infestation

- Look along limbs and/or trunk
- Dried sap
- Sawdust (toothpicks)
- Beetle entrance wholes

Swampbay along SW 42 St. canal (off of SW 162 Ave.)



Sapwood
discoloration

Sawdust
toothpicks



Sawdust



Avocado symptoms

Symptoms to look for

- Leaf and young stem wilting
- Leaf color change from green to dark green, bluish-green to greenish-brown.



Avocado

Symptoms

Symptoms to look for

- Dead leaves hanging on the tree
- Stem and limb dieback
- Commonly sections of the tree show symptoms and other sections do not.



Avocado symptoms

Symptoms to look for

- Inspection of the trunk and limbs
 - Dried sap
 - Sawdust (toothpicks)
 - Beetle entrance holes



Avocado inspection and inspection

Symptoms to look for

- Remove the bark down to the sapwood and look for dark streaking.
- Dark streaks in the sapwood may indicate fungal infection. Normally this sapwood should be white to yellowish with no dark staining or streaking.
- Small, dark holes in the sapwood indicate wood boring beetles are present.



Who to contact if you have a declining tree?

- First ask the client to make sure the tree showing symptoms is a tree species in the Laurel Family: redbay, swampbay, and avocado
- Laurel wilt does NOT affect citrus, mango, etc.
- Call **Division of Plant Industry at 1-888-397-1517**
 - **DPI will send an inspector and sample**
- Call the local **UF/IFAS Cooperative Extension Service** for more information and updates on laurel wilt

What can you do?

- We do strongly recommend that the wood from redbay, swampbay, avocado and other host woody species in the Laurel Family should **not be moved** or sold as firewood, tree trimmings, BBQ smoke-wood, mulch, or wood-turning material.
- *The State of Florida and local counties are not mandating removal or cutting of any urban residents trees that are affected or dead from laurel wilt.*

What to do?

- *Trees declining from laurel wilt are hosts for the redbay ambrosia beetle which spreads the disease laurel wilt.*
- We recommend urban residents contact either
 - their local waste disposal service or county government for directions on how to dispose of a dead or declining tree potentially infested with beetles that spread a lethal disease
 - an insured and licensed landscape or arborist company to remove and properly dispose of the tree

What to do about LW?

- Tree disposal options will vary by county and local ordinances.
- Chemical control for LW:
 - Redbay trees – Alamo[®] fungicide treatments
 - Contact licensed and insured landscape company or arborist for treatment costs
 - Swampbay trees – no treatments recommended at this time
 - Syngenta working to add more native trees to their label
 - Avocado trees – Tilt[®] is registered for use on avocado but no treatments recommended at this time
 - Non-phytotoxic rates and efficacy are not known
 - Research is on-going to determine treatment options

What to do about RAB?

- Chemical control – not recommended
 - Merit[®] (imidacloprid) is registered for use on landscape trees (not avocado) and forest trees but
 - the environmental hazards
 - Highly toxic to aquatic invertebrates
 - Do not apply to areas where surface water is present
 - Not recommended for areas with highly permeable soils
 - Toxic to bees (pollinators)
 - Will only be effective on trees pre-treated with fungicide to protect against LW
- Destruction of infested trees
 - Check local regulations and statutes
 - Cut, chip, and tarp in place (or remove to burn or bury)

Thank You!

FDACS/DPI Helpline

888-397-1517

DPI links: www.fl-dpi.com

http://www.doacs.state.fl.us/press/2010/04292010_2.html

http://www.fl-dpi.com/enpp/pathology/laurel_wilt_disease.html

savetheguac.com

UF/IFAS Extension offices:

<http://solutionsforyourlife.ufl.edu/map/index.html>

UF/IFAS publications: <http://edis.ifas.ufl.edu>

UF/IFAS Tropical Research and Education Center:

<http://trec.ifas.ufl.edu>