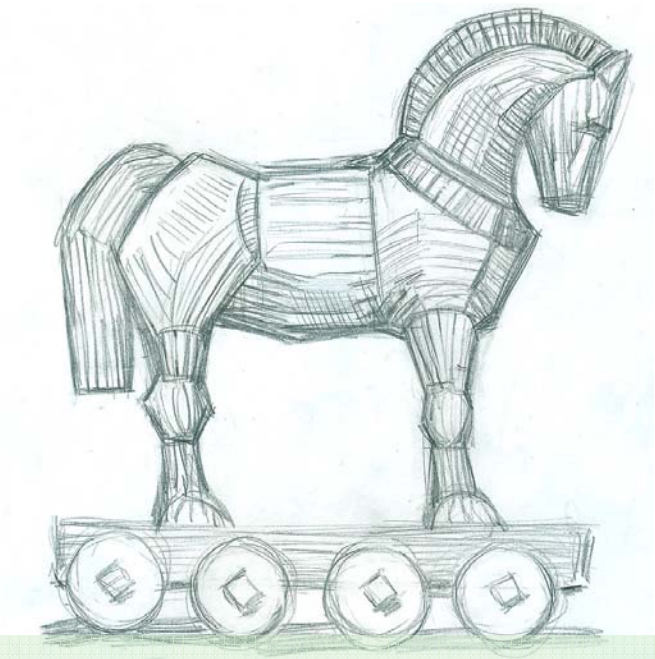
Welcome and Introduction to Laurel wilt



Jason A. Smith

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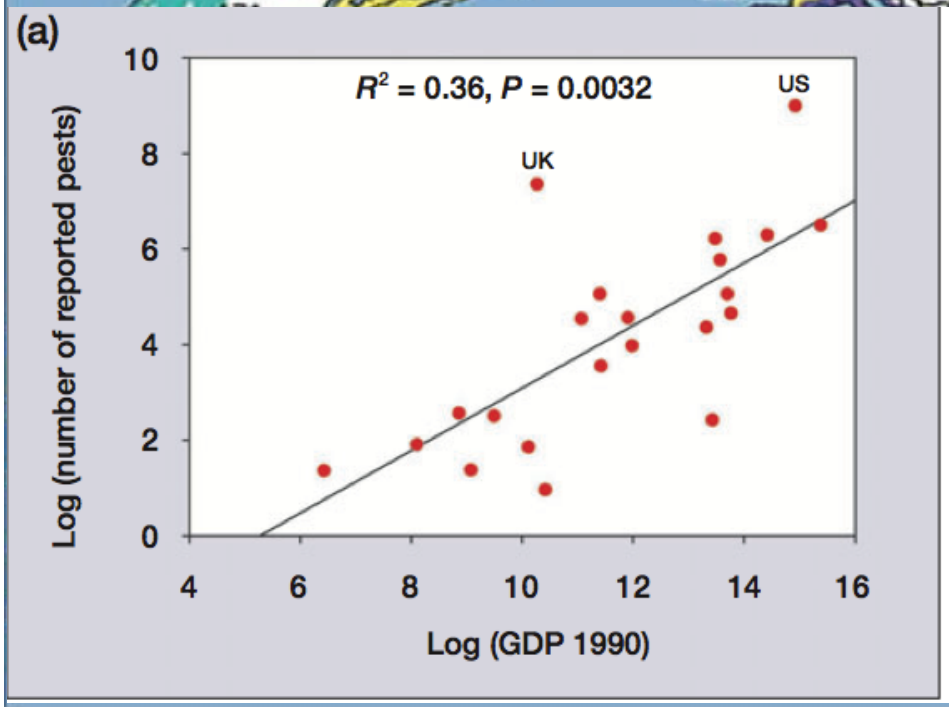
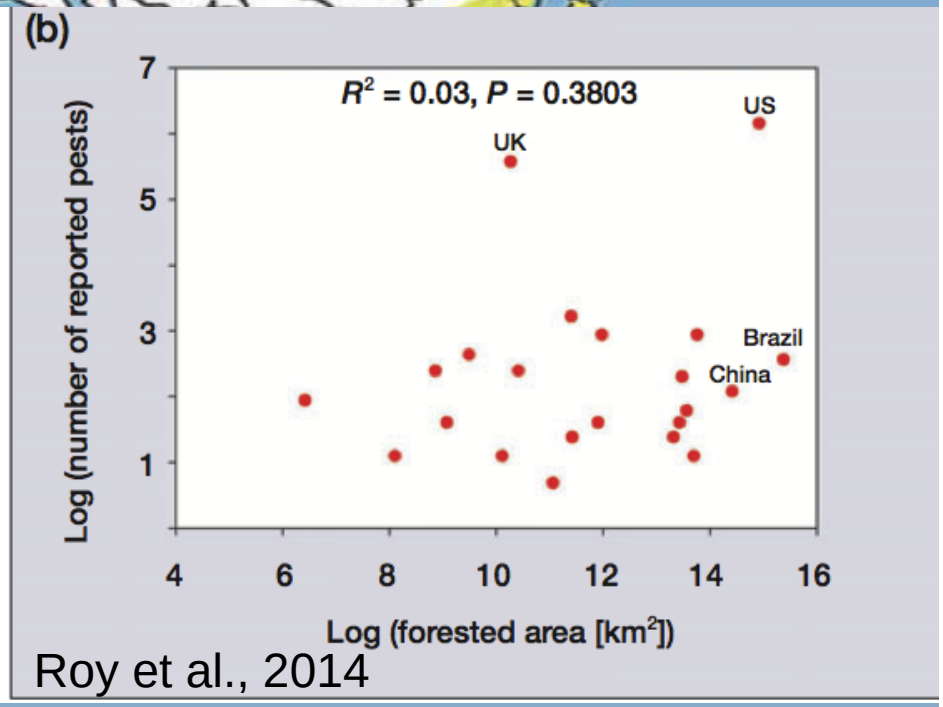
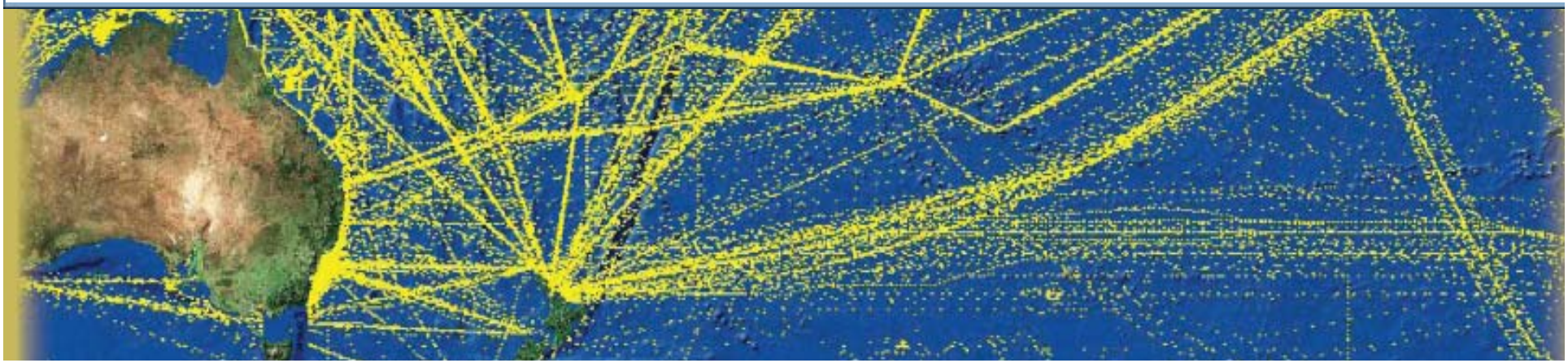


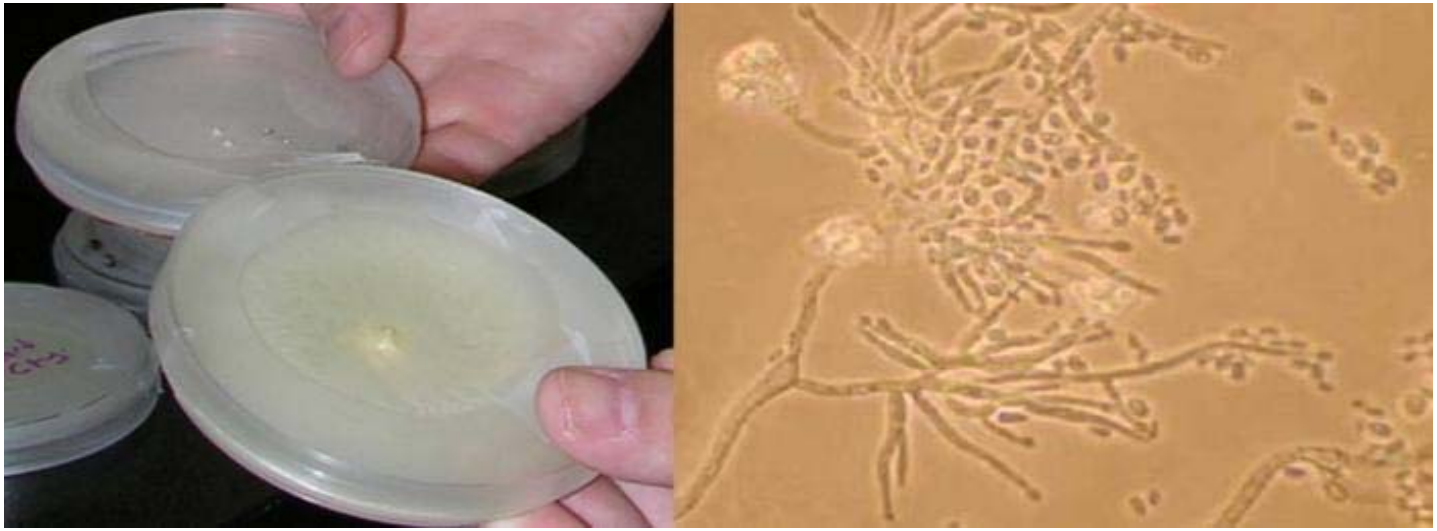


Roy et al., 2014

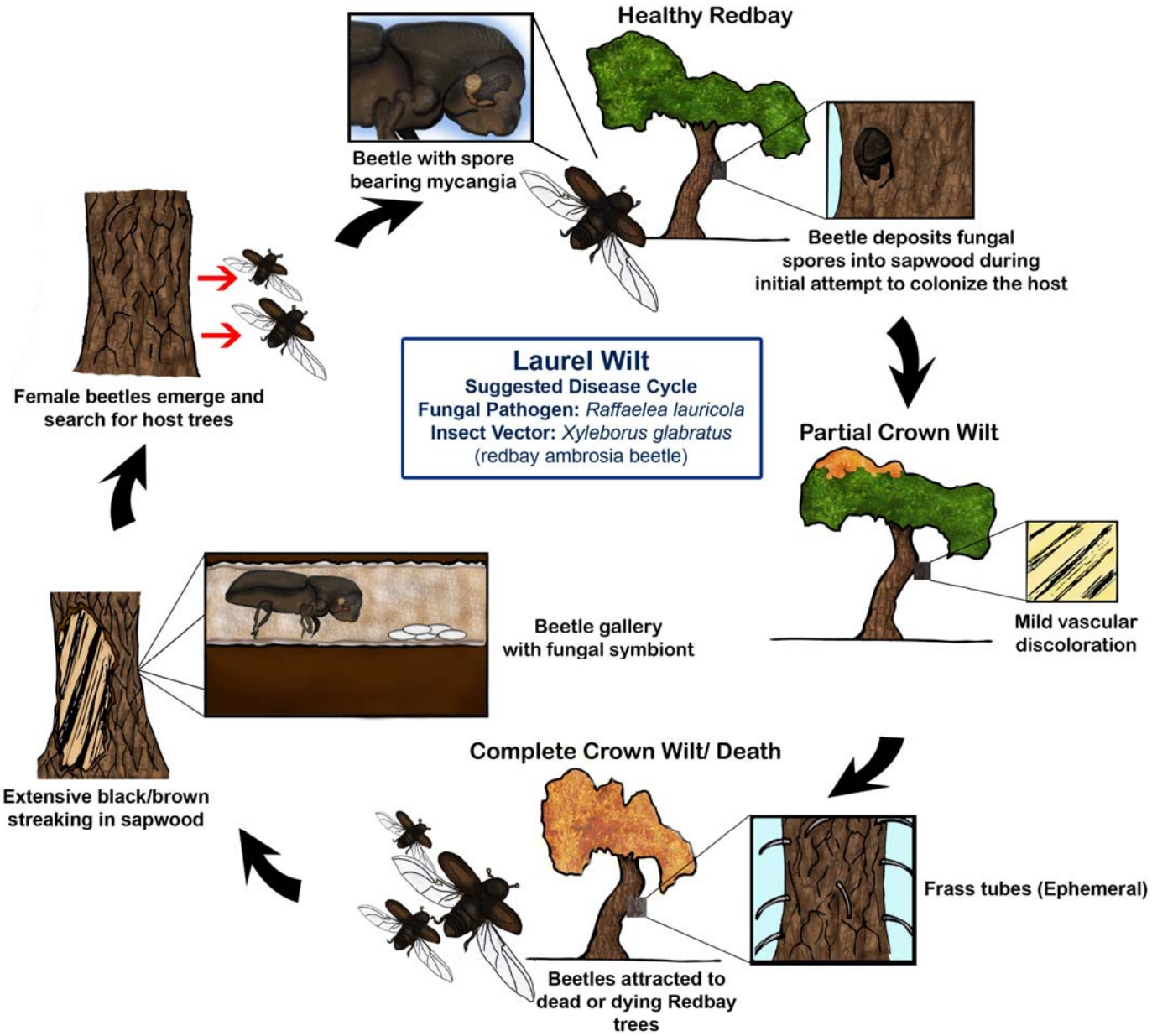


Xyleborus glabratus – redbay ambrosia beetle

Raffaelea lauricola - Ophiostomatales



Ambrosia beetles are typically harmless



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Last Revised 10/2014

Known hosts in the USA

Persea palustris – Swamp bay

Persea humilis - Silkbay

Persea americana - Avocado

*Persea indica**

Cinnamomum camphora - Camphortree

Sassafras albidum - Sassafras

Umbellularia californica – California bay laurel*

Laurus nobilis – European bay laurel

Lindera benzoin - Northern spicebush

Lindera melissifolia - Pondberry

Litsea aestivalis - Pondspice

*Licaria triandra** - Gulf licaria

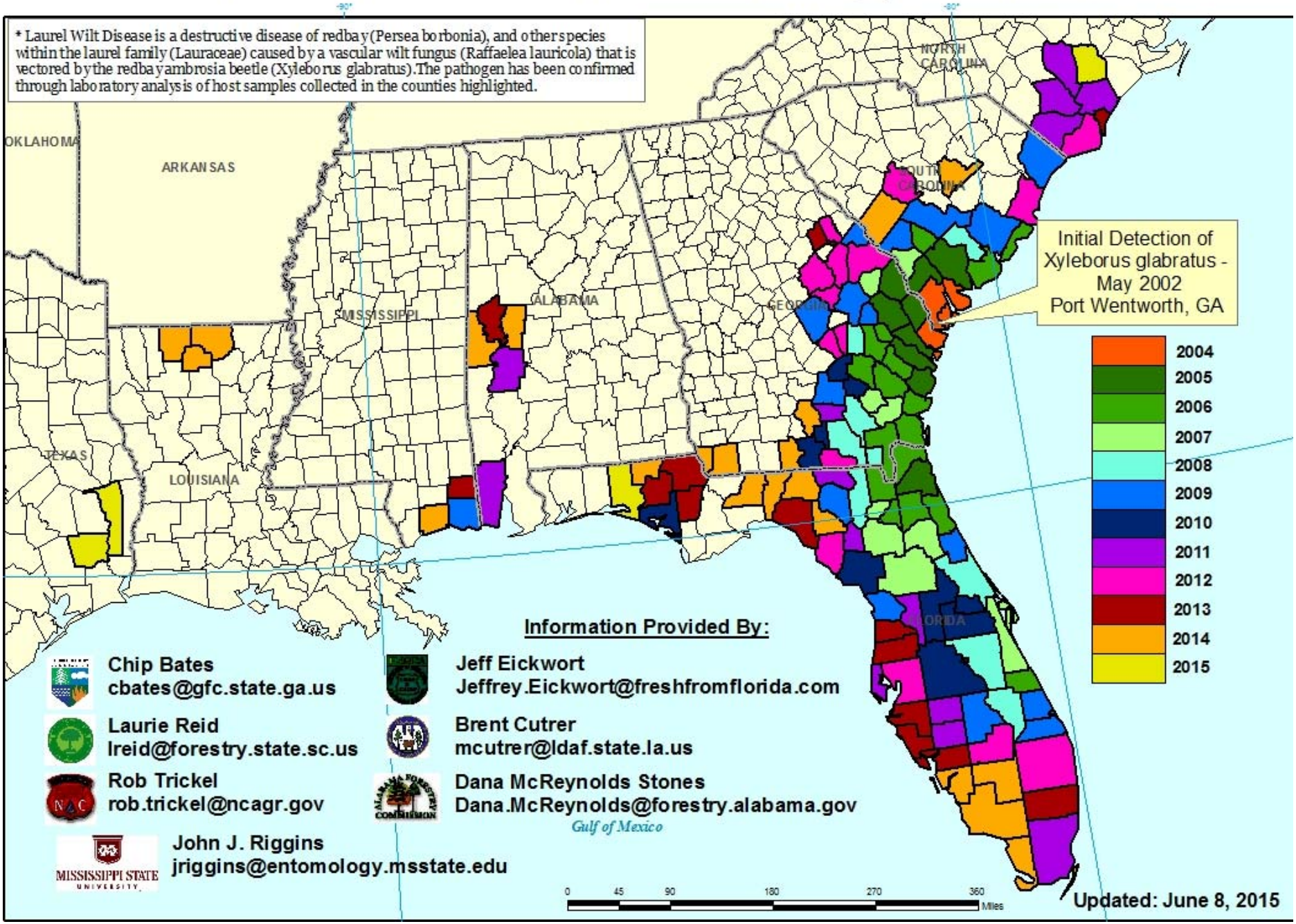
*Ocotea coriacea** - Lancewood

***Persea mexicana** – Mexican redbay*

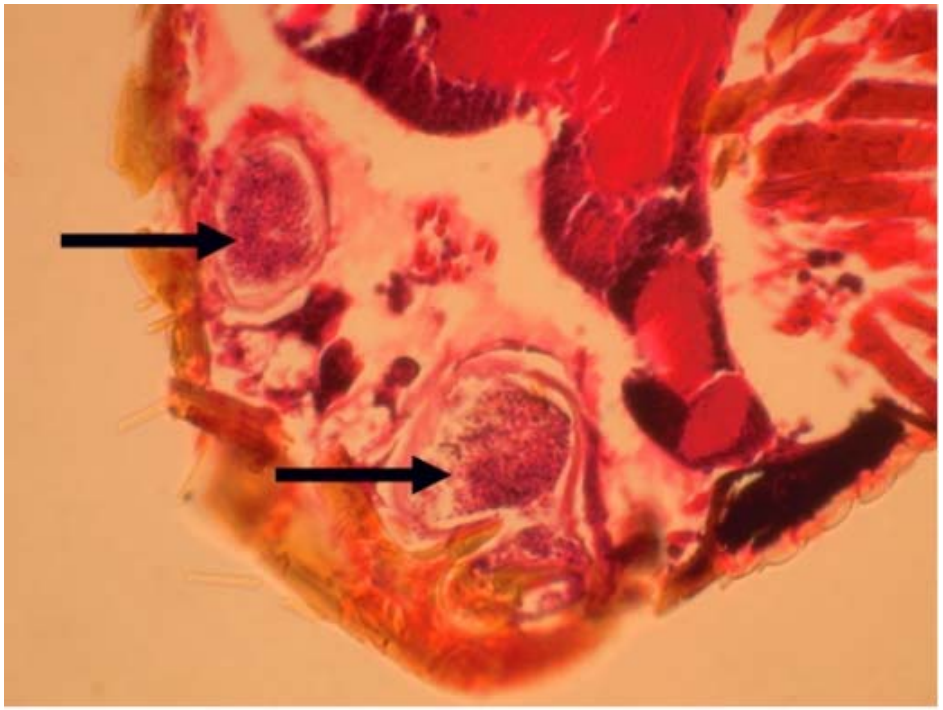
* = Artificial inoculation

Many more hosts may remain!

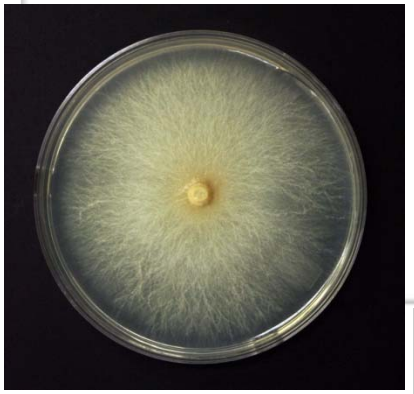
Distribution of Counties with Laurel Wilt Disease* by year of Initial Detection

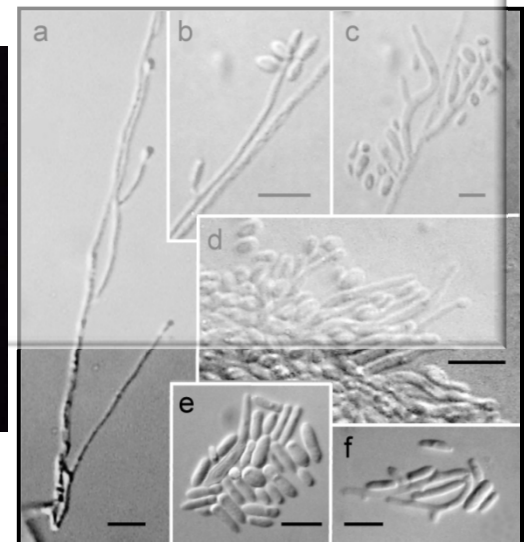


Raffaelea lauricola

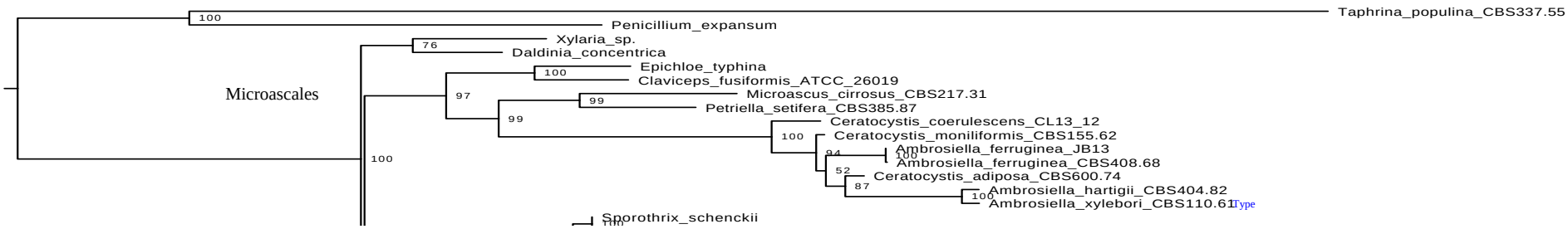


- Primary fungal symbiont
- Ophiostomatales
- 1st known ambrosia beetle symbiont to cause a systemic vascular wilt





Photographs by: Fraedrich et al. 2008, Harrington et al. 2008



FUNGAL BIOLOGY 118 (2014) 970–978

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*e-Xtra**

Development of Multilocus PCR Assays for *Raffaelea lauricola*, Causal Agent of Laurel Wilt Disease

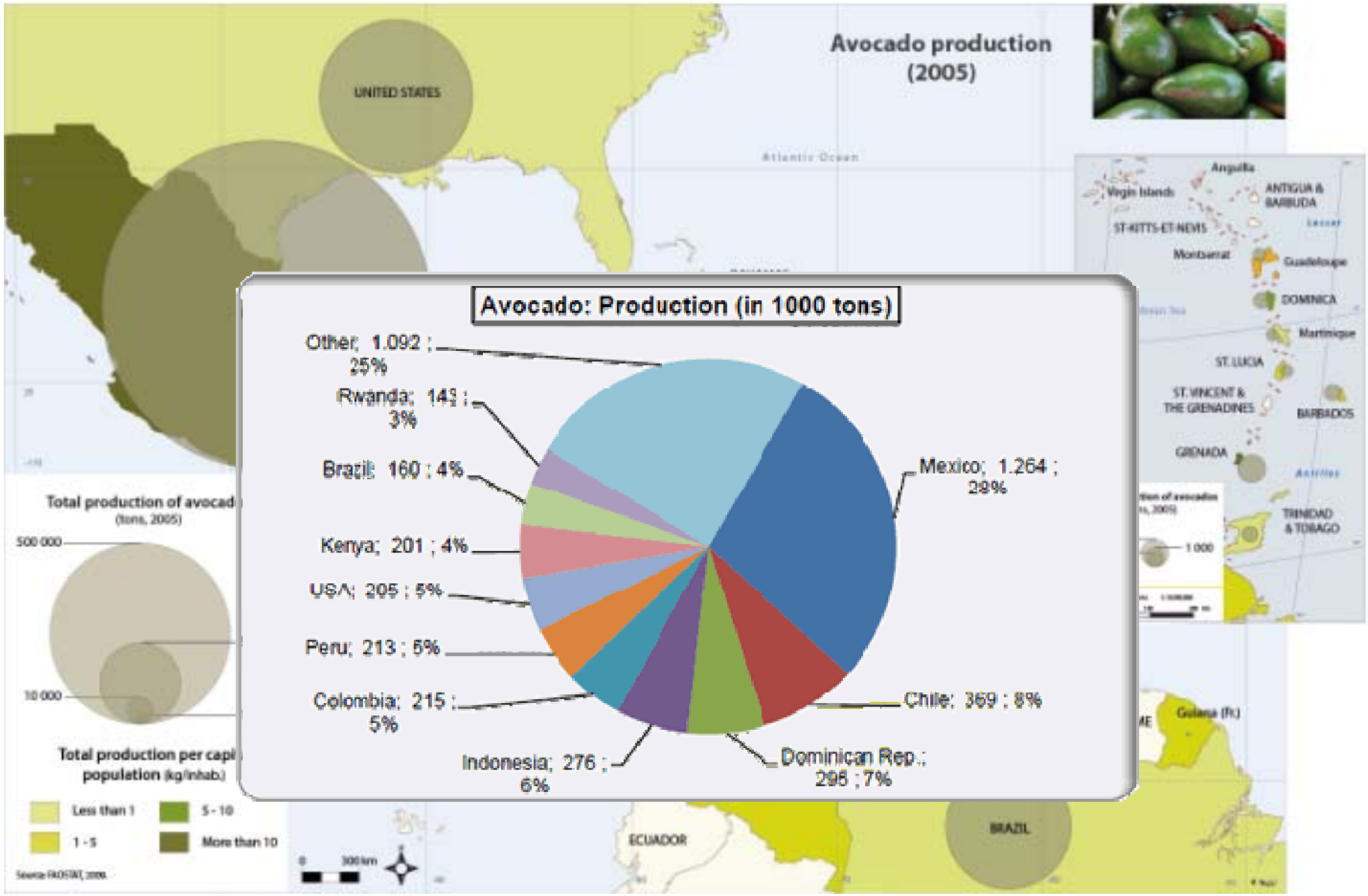
Tyler J. Dreaden and **John M. Davis,** School of Forest Resources and Conservation, University of Florida, Gainesville 32611; **Carrie L. Harmon,** Department of Plant Pathology, University of Florida, Gainesville 32611; **Randy C. Ploetz** and **Aaron J. Palmateer,** Tropical Research and Education Center, University of Florida, Homestead 33031; **Pamela S. Soltis,** Florida Museum of Natural History, and **Jason A. Smith,** School of Forest Resources and Conservation, University of Florida, Gainesville

Abstract

500,000,000+.....
and counting!!!

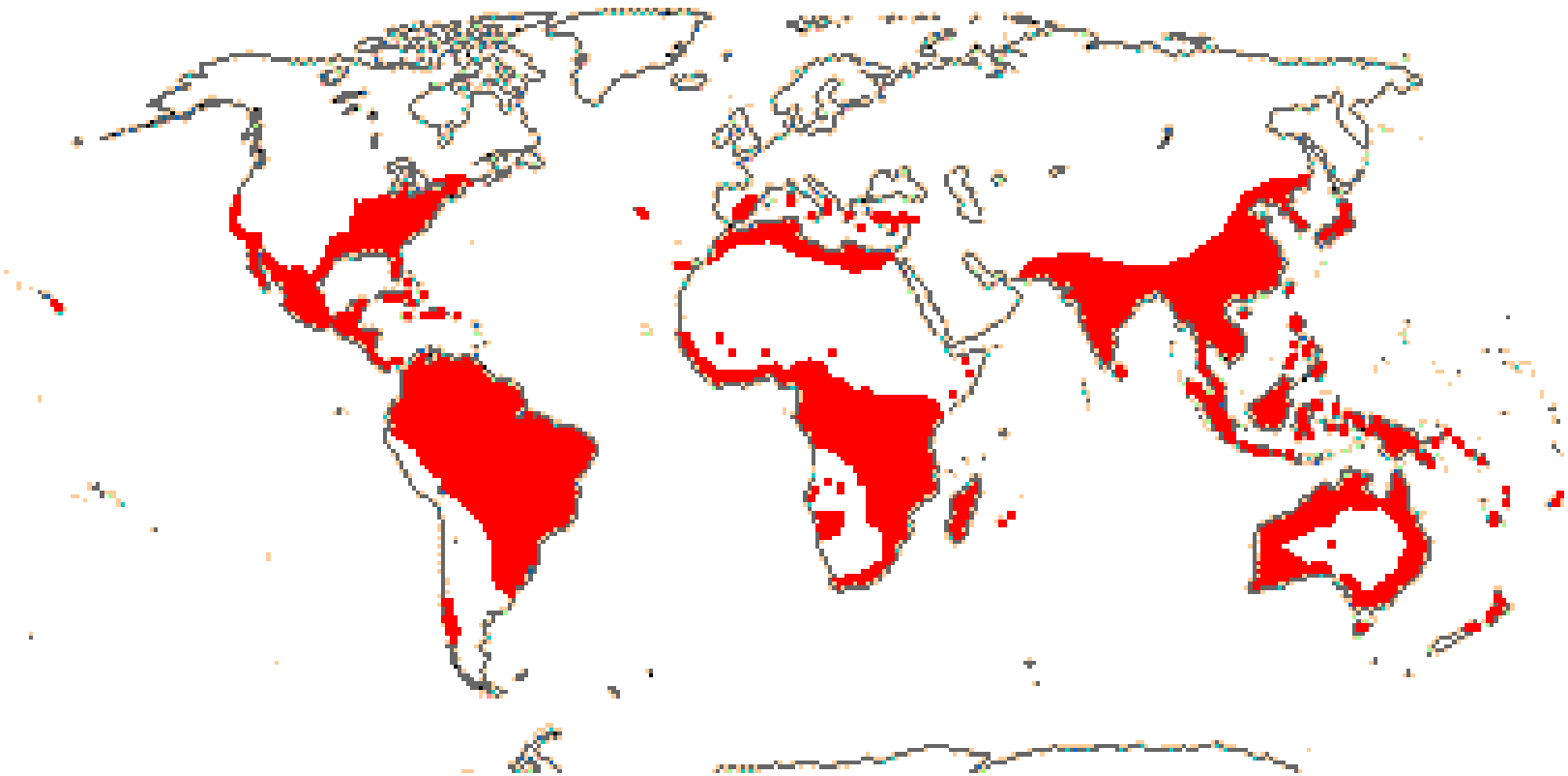
Photo: LeRoy Rodgers

Photo: Randy Ploetz

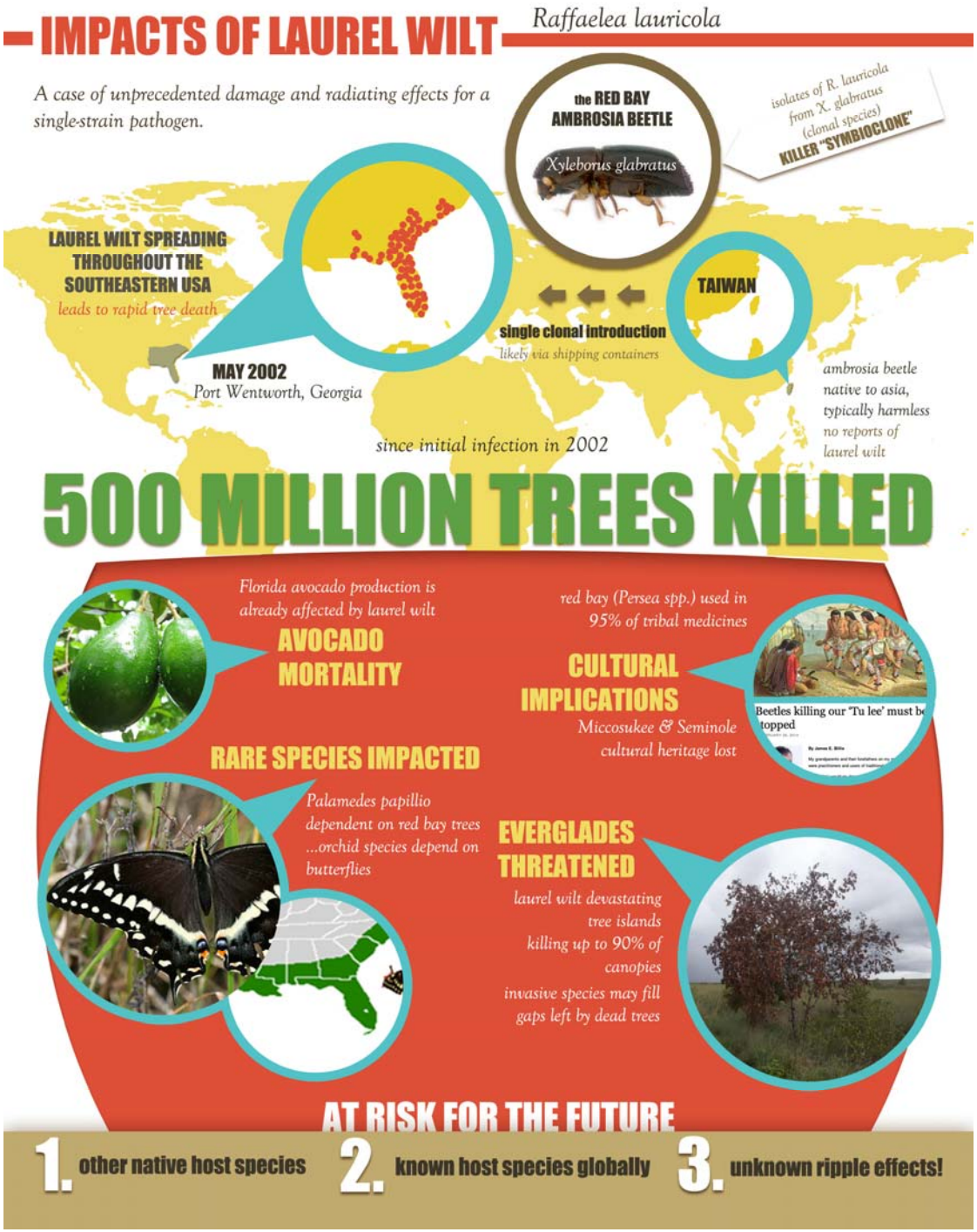


www.caribbeanatlas.org

Global Lauraceae Forests



www.mobot.org


IMPACTS OF LAUREL WILT
Raffaelea lauricola
A case of unprecedented damage and radiating effects for a single-strain pathogen.
the RED BAY AMBROSIA BEETLE
Xyleborus glabratus
isolates of R. lauricola from X. glabratus (clonal species)
KILLER "SYMBIOCLONE"
LAUREL WILT SPREADING THROUGHOUT THE SOUTHEASTERN USA
leads to rapid tree death
MAY 2002
Port Wentworth, Georgia
single clonal introduction
likely via shipping containers
TAIWAN
ambrosia beetle native to asia, typically harmless
no reports of laurel wilt
since initial infection in 2002
500 MILLION TREES KILLED
Florida avocado production is already affected by laurel wilt
AVOCADO MORTALITY
red bay (Persea spp.) used in 95% of tribal medicines
CULTURAL IMPLICATIONS
Miccosukee & Seminole cultural heritage lost
Beetles killing our 'Tu lee' must be topped
RARE SPECIES IMPACTED
Palamedes papillio dependent on red bay trees
...orchid species depend on butterflies
EVERGLADES THREATENED
laurel wilt devastating tree islands
killing up to 90% of canopies
invasive species may fill gaps left by dead trees
AT RISK FOR THE FUTURE
1. other native host species
2. known host species globally
3. unknown ripple effects!

Special Thanks

- Chip Bates, GFC
- Funding from USDA-FS, R8, FHP
- UF OCI, Beth Miller Tipton and team
- Paloma Carton de Grammont Lara
- UF/IFAS
- Forest Pathology Lab