

# The forest beetles you need to know about

The Southern Pine Beetle  
Ambrosia beetles

Jiri Hulcr

# The Southern Pine Beetle

Jiri Hulcr

## Perspective

Bark beetles

There are about...

- a) 5
- b) 25
- c) 50
- d) 100

... bark beetle species in Florida.

Of those, approximately

- a) 5
- b) 10
- c) 50
- d) 90

... are pests.

## Perspective

Bark beetles

3,000 species

## Perspective

Bark beetles

mass attack: < 15 species

## Southern pine beetle

*Dendroctonus frontalis*

The smallest of *Dendroctonus*

The fastest-reproducing

Only attacks living trees



## Southern pine beetle

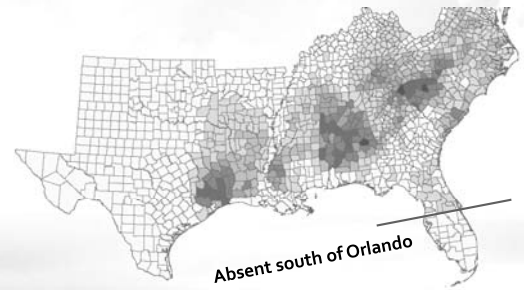
*Dendroctonus frontalis*

Only in the South and South East



## Southern pine beetle

Very uneven distribution



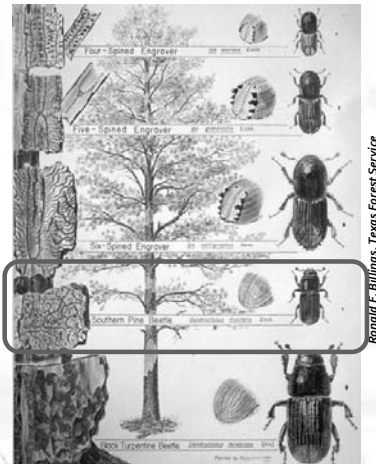
## Southern pine beetle

Similar species on pines in SE USA:

*Ips* (3 species)

Southern pine beetle

Black turpentine beetle



## Southern pine beetle

Primary host:

**Loblolly pine**

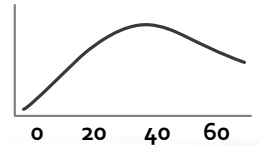
Also used hosts:

pitch, slash, virginia, other pines

Bad hosts:

longleaf pine, other conifer genera

Attack probability changes with age



## Dynamics - complex

Mass-attack started by:

lightning strike  
fire or other injury

1. Females attracted by host stress volatiles
2. Females produce pheromones to attract males and more females
3. Males produce repellents
4. Arriving beetles diverted to neighboring trees

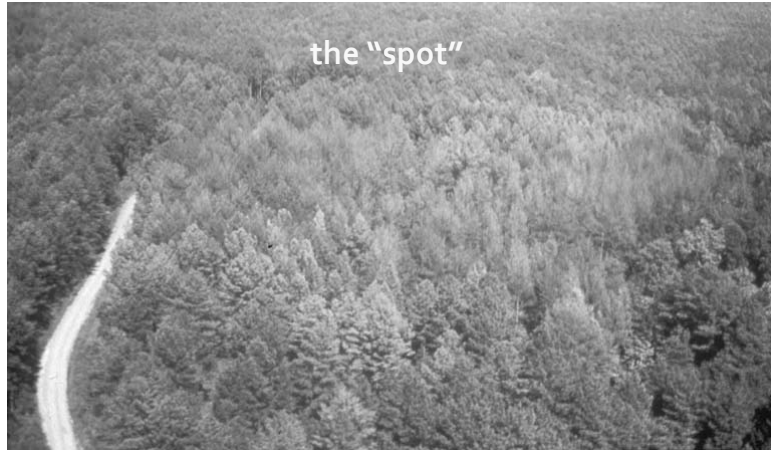
## Dynamics - complex

Mass-attack started by:

lightning strike  
fire or other injury

→ Formation of a spot

## Dynamics - complex



## Dynamics - complex

Mass-attack started by:

lightning strike  
fire or other injury

→ formation of a spot

colonization decline:

predator and  
parasitoid build-up  
exhaustion of  
susceptible hosts  
cold

contributing factors:

previous outbreaks  
stand age and density

no clear effect on SPB dynamics:

pine genotype  
rain/draught

## Management

"My tree is dying, what do I spray it with?"

Dying tree = dead tree

Insecticides in forestry:

- hard to get them into trees
- kill natural enemies



## Management

Integrated Pest Management

Long-term **prevention** of pest damage  
by managing the ecosystem

- 1) Prevention
- 2) Monitoring
- 3) Correct pest ID.
- 4) Suppression

## Management

Integrated Pest Management

1) Prevention - happy forest

- 2) Monitoring
- 3) Correct pest ID
- 4) Suppression

- diverse
- appropriate species to the site
- uneven-aged
- thinned
- dead wood present
- minimal damage to trees and soil

## Management

Integrated Pest Management

- 1) Prevention
- 2) Monitoring
- 3) Correct pest ID.
- 4) Suppression

Aerial surveys & traps  
Florida Forest Service



## Management Integrated Pest Management

- 1) Prevention
- 2) Monitoring
- 3) Correct pest ID.
- 4) Suppression

The southern pine beetle



pitch tubes



wiggly gallery, short larval tunnels



## Management Integrated Pest Management

- 1) Prevention
- 2) Monitoring
- 3) Correct pest ID.
- 4) Suppression

Similar symptoms,  
but no outbreaks!

The *Ips*  
engraver beetle



brown frass



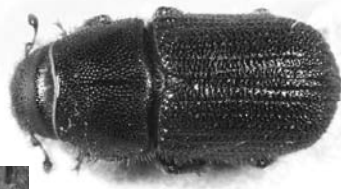
straight, long galleries



## Management Integrated Pest Management

- 1) Prevention
- 2) Monitoring
- 3) Correct pest ID.
- 4) Suppression

The Black  
turpentine beetle



Similar symptoms,  
but no outbreaks!



Ground level, large pitch exudates.

## Management Integrated Pest Management

- 1) Prevention
- 2) Monitoring
- 3) Correct pest ID.
- 4) Suppression

<http://edis.ifas.ufl.edu/fr389>

A simple guide to Florida's bark beetles

## Management Integrated Pest Management

- 1) Prevention
- 2) Monitoring
- 3) Correct pest ID.
- 4) Suppression

Direct suppression, with 20 m buffer



(Pesticides ???)



Repellents



## Management Integrated Pest Management

Test: what do you do  
with this pine that was  
killed 6 months ago?



Questions about the Southern Pine Beetle?



Ambrosia beetle news:

- old pests
- new pests

1

old

2

new

1

old

2

new

- Redbay ambrosia beetle
- Oxoplatypus* on oaks
- Granulated ambrosia beetle
- Black twig borer

1

old

2

new

- Redbay ambrosia beetle
- Oxoplatypus* on oaks
- Granulated ambrosia beetle
- Black twig borer



Lauraceae,  
incl. avocado



1

old

2

new

- Redbay ambrosia beetle
- Oxoplatypus* on oaks
- Granulated ambrosia beetle
- Black twig borer



Lauraceae,  
incl. avocado



Marc Hughes,  
the next speaker!

1

old

2

new

Redbay ambrosia beetle

*Oxoplatypus* on oaks

Granulated ambrosia beetle

Black twig borer

Following a stress period,  
flooding, or a root disease.

1

old

2

new

Redbay ambrosia beetle

*Oxoplatypus* on oaks

Granulated ambrosia beetle

Black twig borer

#1 nursery tree killer in SE USA  
ONLY stressed trees!

1

old

2

new

Redbay ambrosia beetle

*Oxoplatypus* on oaks

Granulated ambrosia beetle

Black twig borer

#1 nursery tree killer in SE USA  
ONLY stressed trees!

- flooding

- late freeze

- disease

1

old

2

new

Redbay ambrosia beetle

*Oxoplatypus* on oaks

Granulated ambrosia beetle

Black twig borer



1

old

2

new

Redbay ambrosia beetle

*Oxoplatypus* on oaks

Granulated ambrosia beetle

Black twig borer

*Xylosandrus compactus* - twig killer  
- also a sapling killer

1 mm

1

old

2

new

Redbay ambrosia beetle

*Oxoplatypus* on oaks

Granulated ambrosia beetle

Black twig borer

1

old

2

new

*Euwallacea interjectus*

*Theoborus ricini*

1

old

2

new

*Euwallacea interjectus*

*Theoborus ricini*





1

old

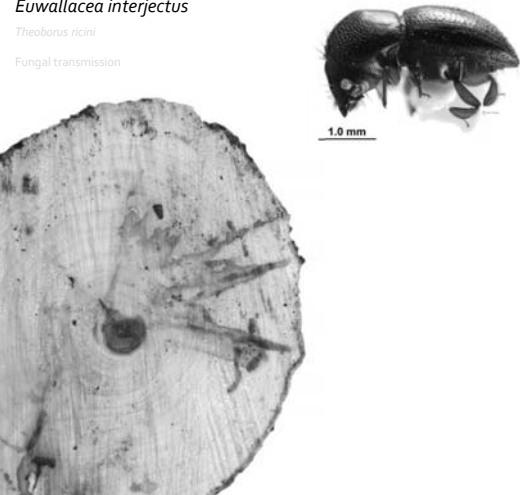
2

new

*Euwallacea interjectus*

*Theoborus ricini*

Fungal transmission



1


old

2

new

*Euwallacea interjectus*


*Theoborus ricini*



- In FL since 1991

- Attacking live trees in South FL since 2000's

- Only in cultivated, watered trees





Pest diagnostics

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GO

Jiri Hulcr

coordinator, wood borers

Jason Smith

forest pathology, tree diseases

Adam Black

general inquiries

Lyle J. Buss

timber & household pests

Something

bugging

your forest?

Forest Health News

Is the Southern Pine Beetle coming back? See video from Ponte Vedra (Aug 22)

The Emerald Ash Borer has entered the South - now killing ashes in N Georgia (Aug 22)

New disease on oaks in Florida: *Diplodia corticola* (August, 2011)

We are here to help identify pests and diseases in your forest, and to recommend a solution!

We are a group of forest health specialists at the University of Florida/IFAS. We guarantee fast and accurate forest pest and disease diagnostics for Florida and the South East.

How do you get your answer? Check out the Forest Health Forum or send a sample. We can

1

old

2

new

3

help?

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Questions	Posts	Freshness
Maple Tree Started by:  tharold: Maple Tree	9	1 month, 1 week ago 
Douglas fir sap problem Started by:  eglem in: Main	4	3 months, 3 weeks ago 
Browning yellow poplars Started by:  amosch in: Main	4	4 months, 1 week ago 
Maple tree trouble Started by:  cweath in: Main	6	4 months, 1 week ago 
Basal fungal cone of live oak Started by:  Eric Meyer in: Main	3	4 months, 1 week ago 
Dead slash pines	6	5 months ago

1

old

2

new

3

help?

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[www.sfrc.ufl.edu/TreeHealth](http://www.sfrc.ufl.edu/TreeHealth)



Questions?