

Management of Peach Tree Pests in Florida

Amanda C. Hodges, Ph.D.

Extension Scientist & DPM Director

Entomology and Nematology Department, UF/IFAS

Gainesville, FL

Potential Stone Fruit and Peach Pests



Stink
Bugs and
Catfacing
Insects

Borers



Caribbean
Fruit Fly

Plum
Curculio



Photo Credits: Russell Mizell, University of Florida (top left), James Solomon, forestryimages.org (top right), Florida Department of Agriculture, bugwood.org (bottom left), E. Levine, The Ohio State University, Bugwood.org

Plum Curculio and Wild Plum Hosts

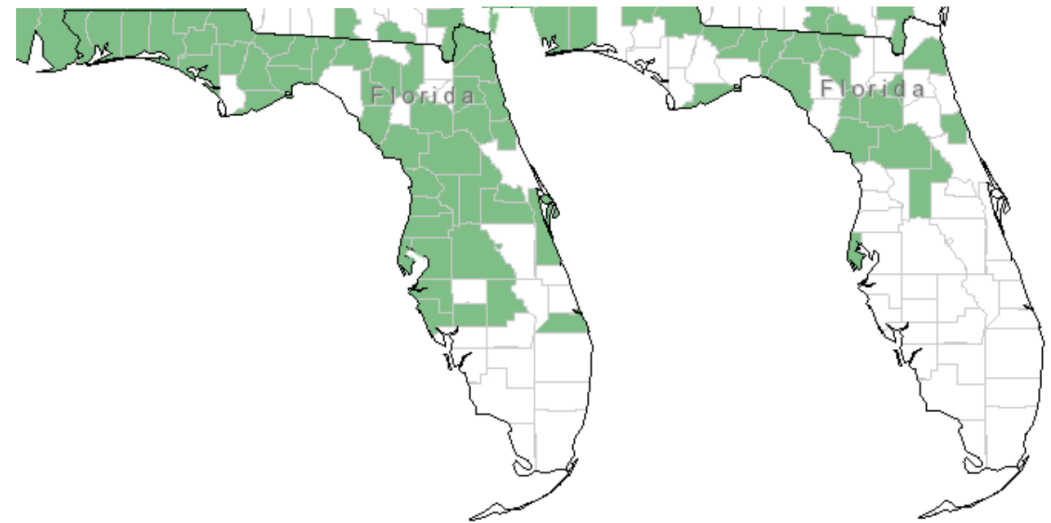
- May not be a concern
- Monitor for plum curculio



UGA1234091

Clemson University-USDA Cooperative
Extension Slide Series, Bugwood.org

Wild Plum Range (estimates)



Prunus umbellata

Prunus angustifolia

Potential Stone Fruit and Peach Pests

White peach scale, *Pseudaulacaspis pentagona*

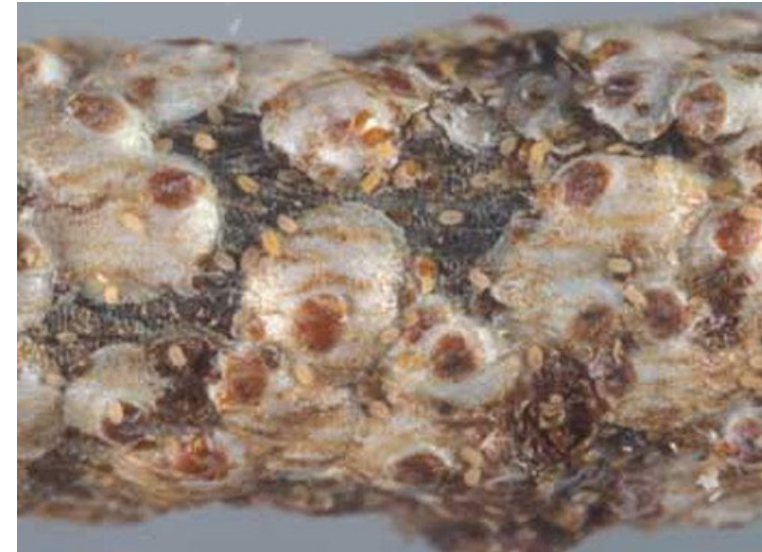


Photo by G. Krawczyk, PennState Extension (top)
[Tree Fruit Insect Pest - White Peach Scale \(psu.edu\)](http://psu.edu)
Photo by Lyle Buss, University of Florida (right)
[white peach scale - Pseudaulacaspis pentagona \(Targioni\) \(ufl.edu\)](http://ufl.edu)

Potential Stone Fruit and Peach Pests

San Jose Scale, *Comstockaspis perniciososa*



Photo by George Rock, NCSU (left)

Photo by J.F. Wagenbach, NCSU (right)

Potential Stone Fruit and Peach Pests



Female white peach scale with armor removed to show her yellow body and white (male) eggs (female eggs are orange).

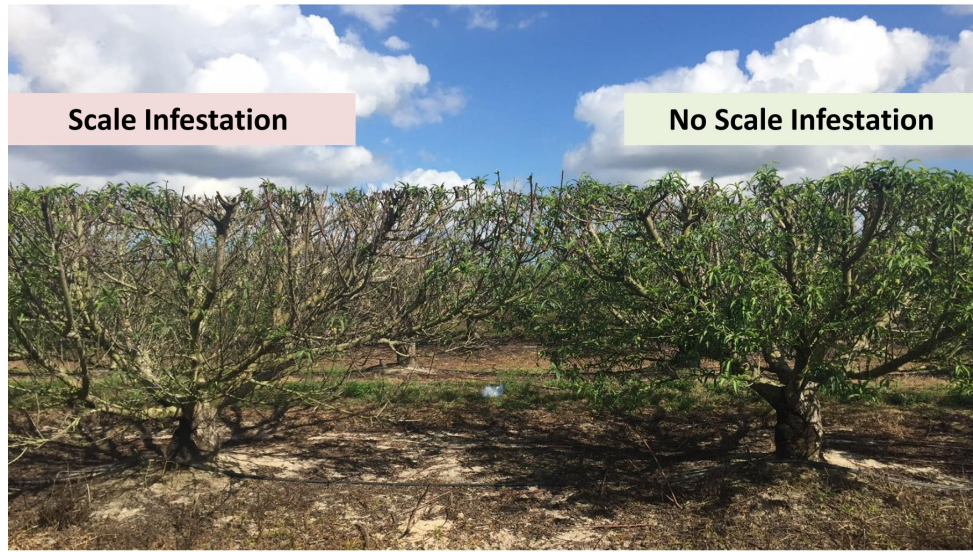
Photo by J. R. Baker



Photos from NCSU (left)

Lyle Buss, University of Florida (photo right)

Scale Insects in Peach



- Use 2 dormant superior oil sprays per year (may not be possible for higher temperature years)
- IGRs (active ingredient pyriproxyfen) may be effective but are expensive
- Coverage is important
- Conserve natural enemies

Potential Stone Fruit and Peach Pests

- What do scale insects, mealybugs, aphids, and stink bugs have in common?

Order Hemiptera: Stink bugs, aphids, mealybugs, whiteflies, scales

All have a stylet

Stink bugs

- Hemelytra
- Scutellum (triangle)
- 5-segmented antennae

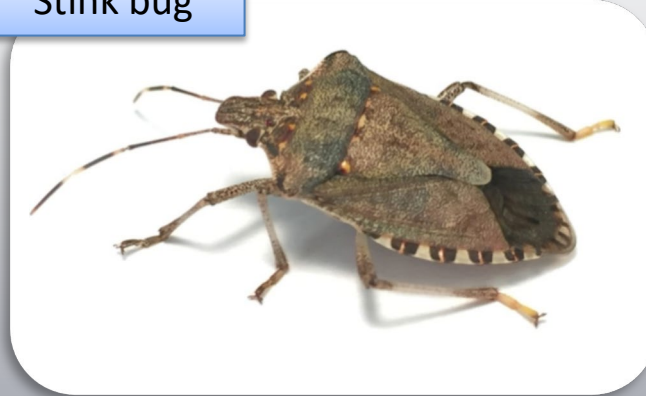
Aphids

- Cornicles
- Honeydew
- Long antennae

Mealybug

- Honeydew
- Covered in white wax
- Legs, still mobile, unlike scales

Stink bug



Aphid



Mealybug



Stink Bug Trapping

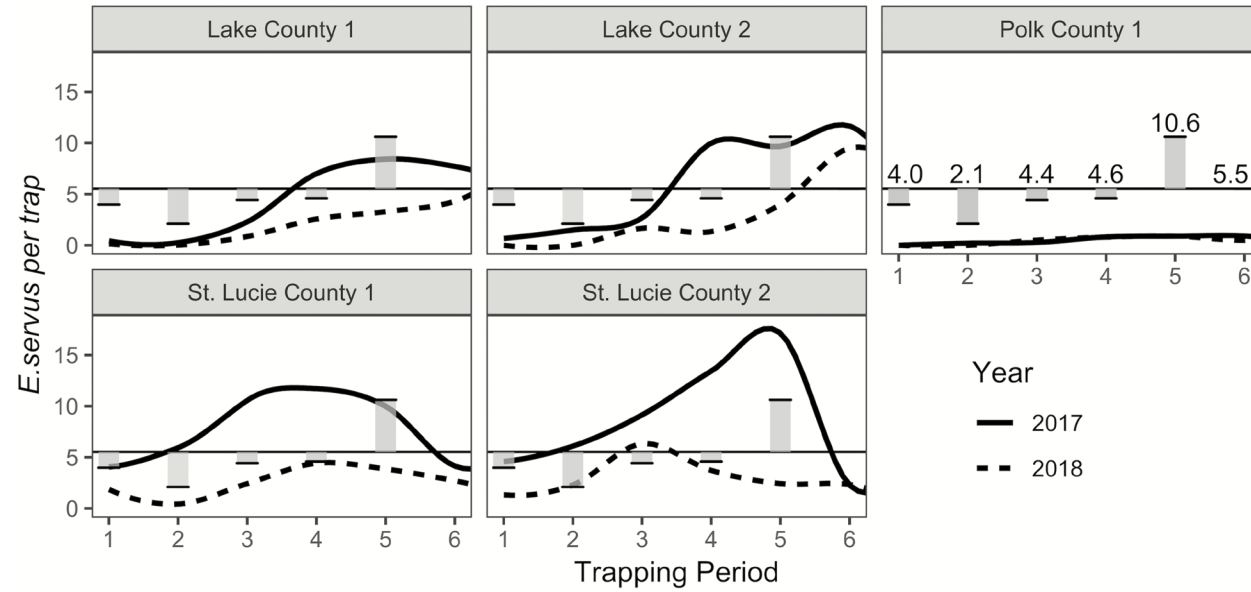
2017 and 2018

- Lake County
 - 2 sites
 - 7 traps site 1
 - 3 sites trap 2
- Polk County
 - 1 site
 - 10 traps
- St Lucie County
 - 2 sites
 - 7 traps each
- Proposed EIL (Economic Injury Level),
5.53 *E. servus* over a 14-day period

Penca et al. 2020



Fig. 7. Evaluation of economic thresholds based on 2017 and 2018 *Euschistus servus* trap capture at an EIL of 5.53 ...



Pest Versus Beneficial



Pest Versus Beneficial



Pest Versus Beneficial



The Brown Stink Bug, *Euschistus servus*



The Brown Stink Bug, *Euschistus servus*



Pest Versus Beneficial



Pest Versus Beneficial



Spined Solider Bug, *Podisus maculiventris*



Pest Versus Beneficial



Damage, Brown Marmorated Stink Bug

- Feed using piercing sucking mouth parts
- Typically fruiting structures are damaged
 - Also leaves, stems, petioles, flowers, and seeds

BMSB on Fruit



BMSB Aggregation



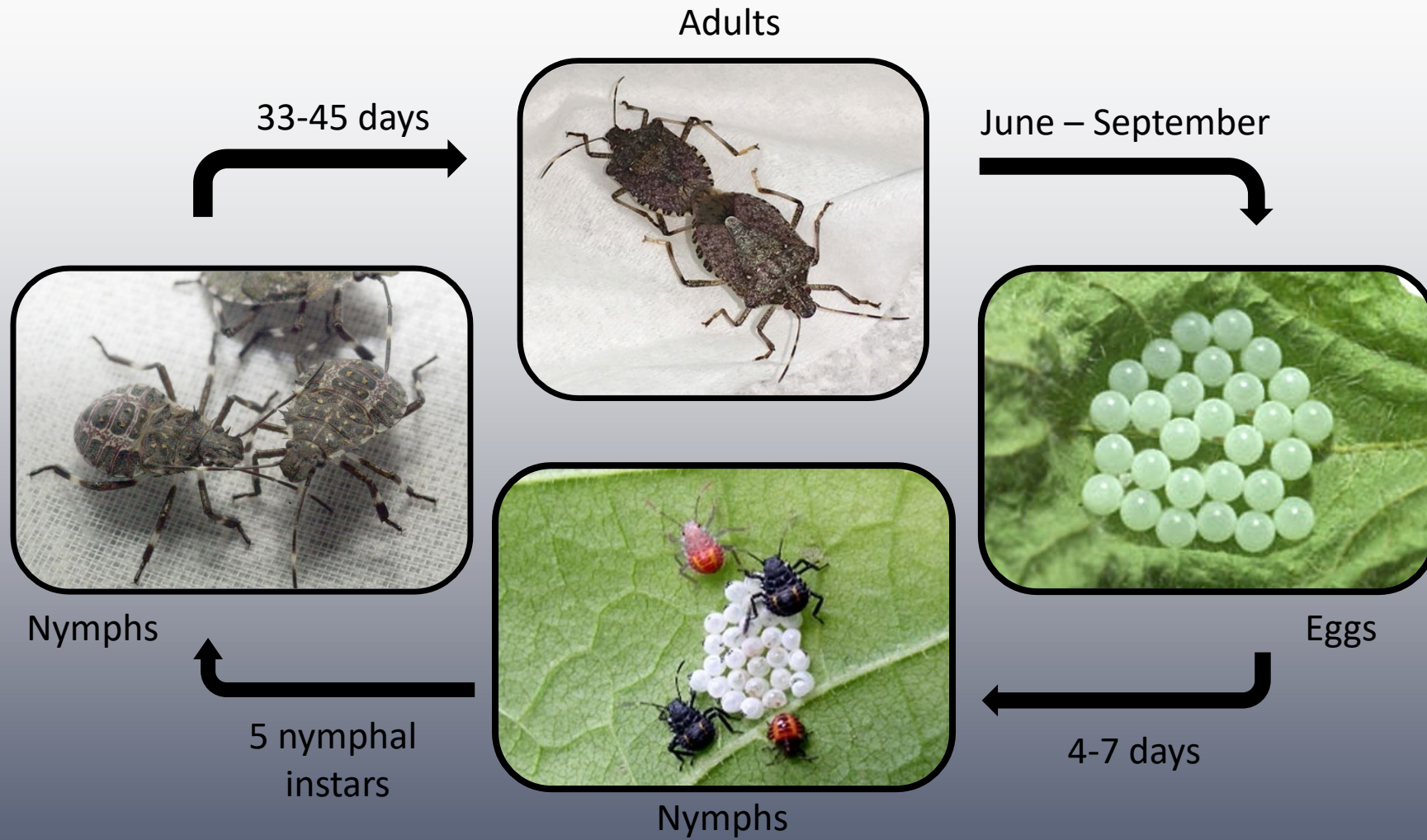
Photos: Wikimedia commons
(right), Jeanette E. Warnert (left)



FLORIDA FIRST DETECTOR



Life Cycle



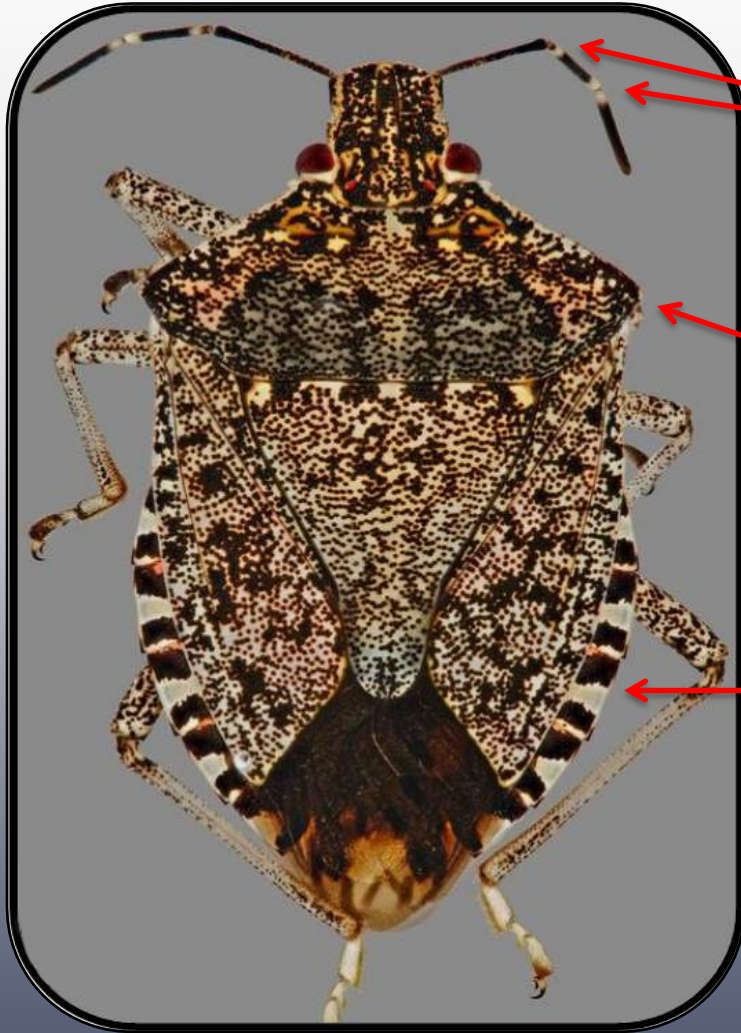
Photos: (starting from top center) – Jennifer Carr, UF BRE Lab; David R. Lance, USDA APHIS PPQ, Bugwood.org #1460049; Gary Bernon, USDA APHIS, Bugwood.org #1113010; David R. Lance, USDA APHIS PPQ, www.bugwood.org, #UGA1460052.



FLORIDA FIRST DETECTOR



Identification: Adults



Two light colored bands on the antennal segments

Rounded shoulders

Alternating light and dark bands along the edges of the abdomen

Photo: Steven Valley, Oregon Department of Agriculture, bugwood.org #5458958

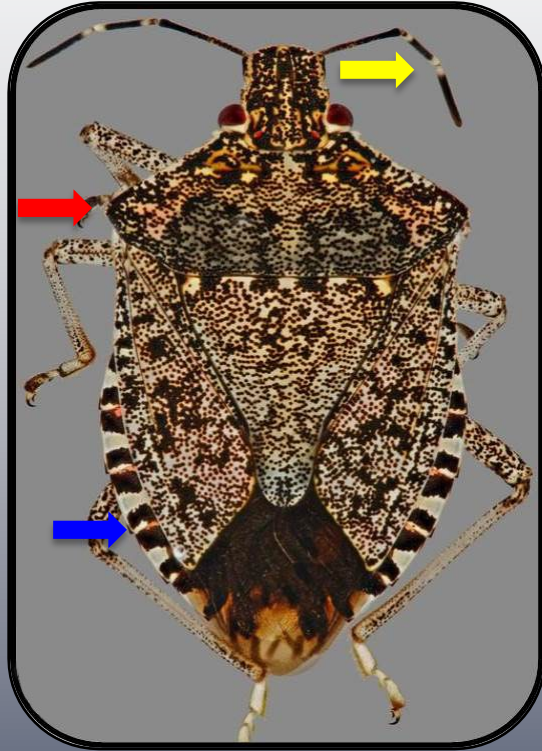


FLORIDA FIRST DETECTOR

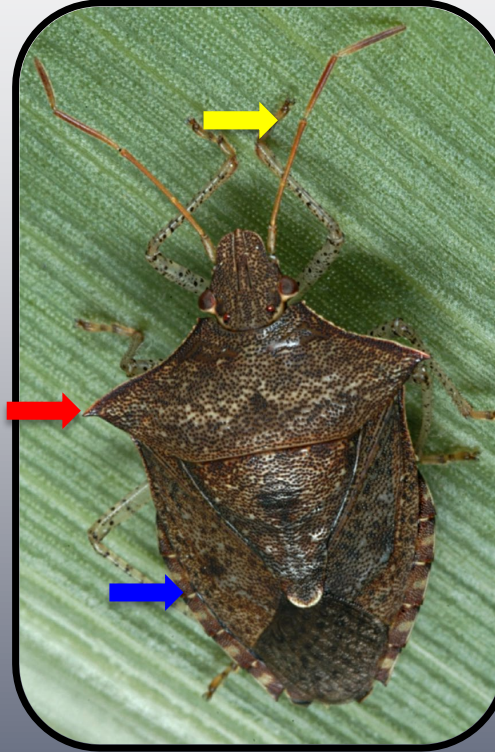


Look-Alike Species

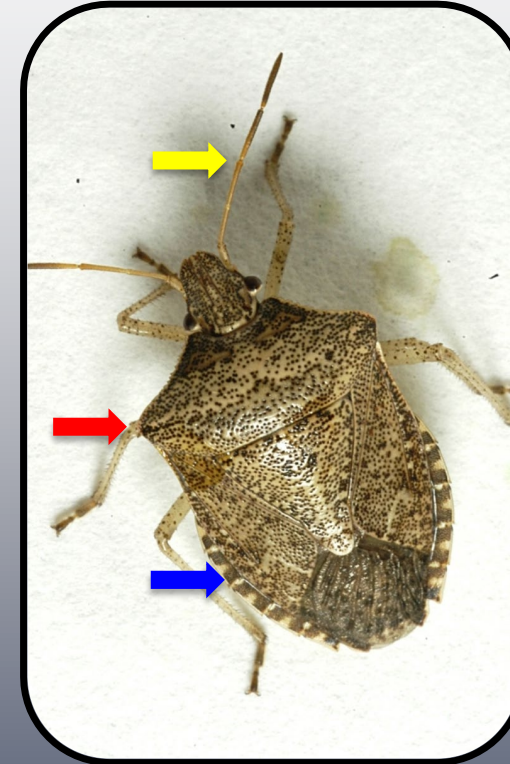
BMSB
Halyomorpha halys



Dusky Stink Bug
Euschistus tristigmus



Brown Stink Bug
Euschistus servus



 Shoulders  Antennae  Edge of the Abdomen

Photos: (Left) - Steven Valley, Oregon Department of Agriculture, bugwood.org #5458958, (Center) - Herb Pilcher, USDA Agricultural Research Service, Bugwood.org #2135007; (Right) - Herb Pilcher, USDA Agricultural Research Service, Bugwood.org #2135001



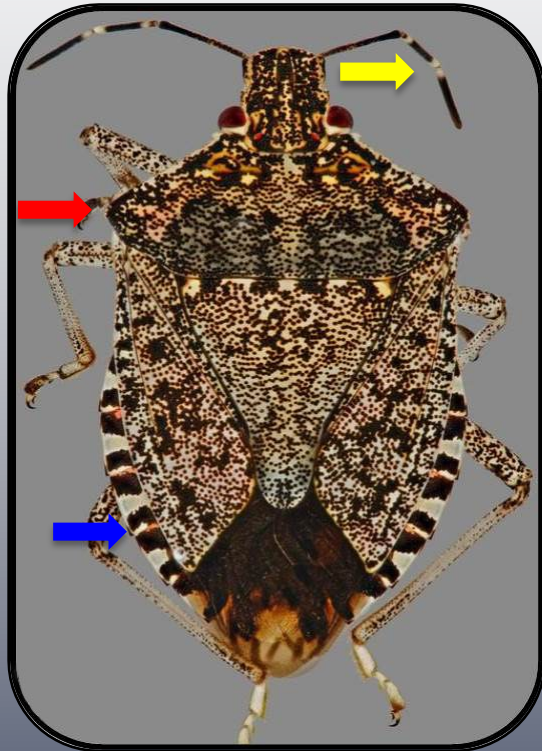
FLORIDA FIRST DETECTOR



Look-Alike Species

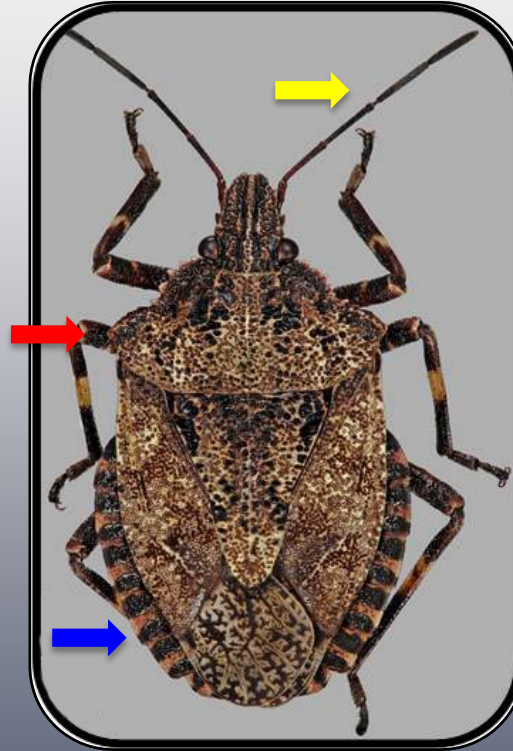
BMSB

Halyomorpha halys



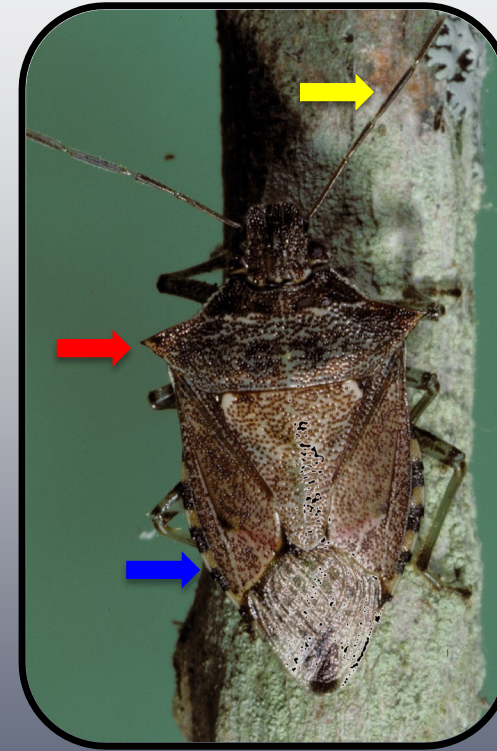
Rough Stink Bug

Brochymena quadripustulata



Spined Soldier Bug

Podisus maculiventris



→ Shoulders

→ Antennae

→ Edge of the Abdomen

Photos: (Left and Center) - Steven Valley, Oregon Department of Agriculture, Bugwood.org #5458958 and #5458954; (Right) - Gerald J. Lenhard, Louisiana State University, Bugwood.org #0014174



FLORIDA FIRST DETECTOR



Stink Bug Pest Management

- Protect fruit early, at shuck split
- Nenicotinoids+pyrethroids, not pyrethroids alone
- Weed Control and Management

Seasonal Borer (*Synanthedon* spp.) Emergence in Central and South Florida Peach Orchards

Sesiidae

- Family of moths
- Resemble wasps or bees
- All species are borers
- Larvae feed on over 40 plant families
- Symptoms can include limb loss, yield loss, and plant death



Peachtree Borer, *Synanthedon exitosa*

- Native to the US
- Hosts are *Prunus* spp.
- Most destructive pest of peaches



Peachtree borer



- Larvae bore into tree at the crown
- Damage causes girdling and potential tree death



Lesser Peachtree Borer, *Synanthedon pictipes*

- Native to the US
- Hosts are *Prunus* spp.
- Indirect damage more of a concern
- Males and females look similar



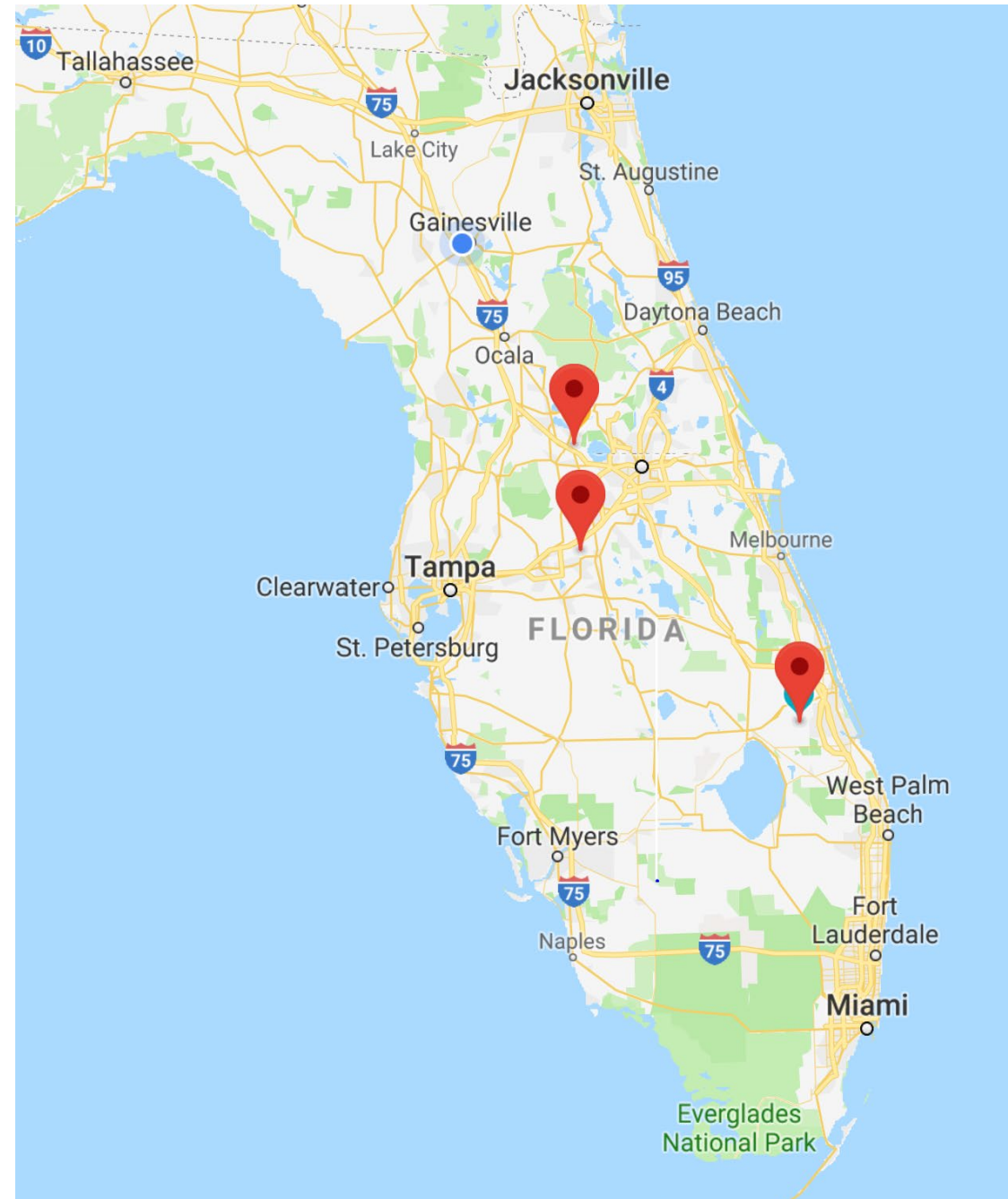
Lesser Peachtree Borer

- Larvae damage base, truck, and branches of trees
- Usually do not cause tree death
- Target older trees



Methods

- Three trapping locations
- Four peach orchards
- Collected every two weeks



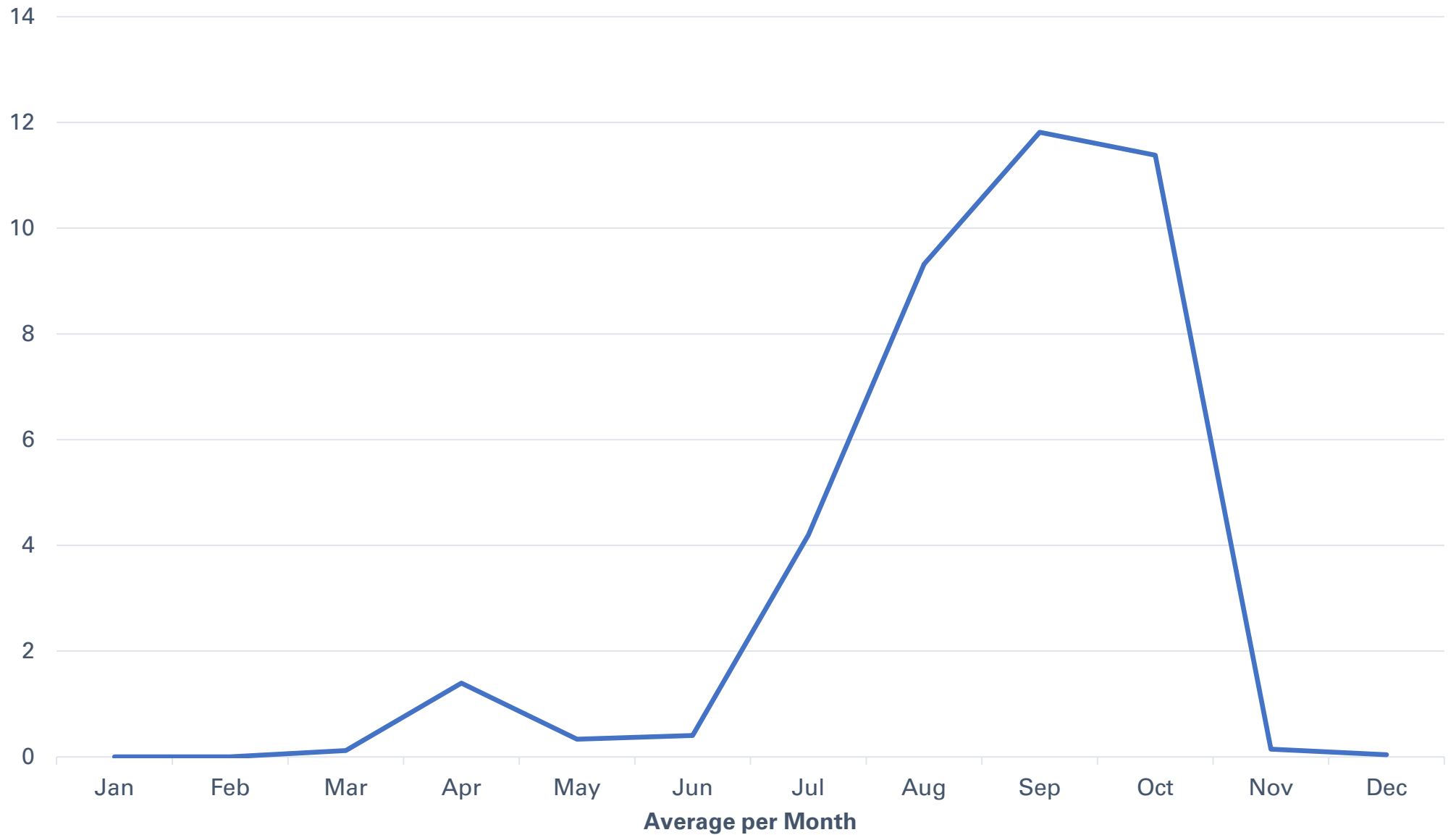
Methods

- Clearwing borer lure: (Z,Z)-3,13-octecadien-1-ol acetate

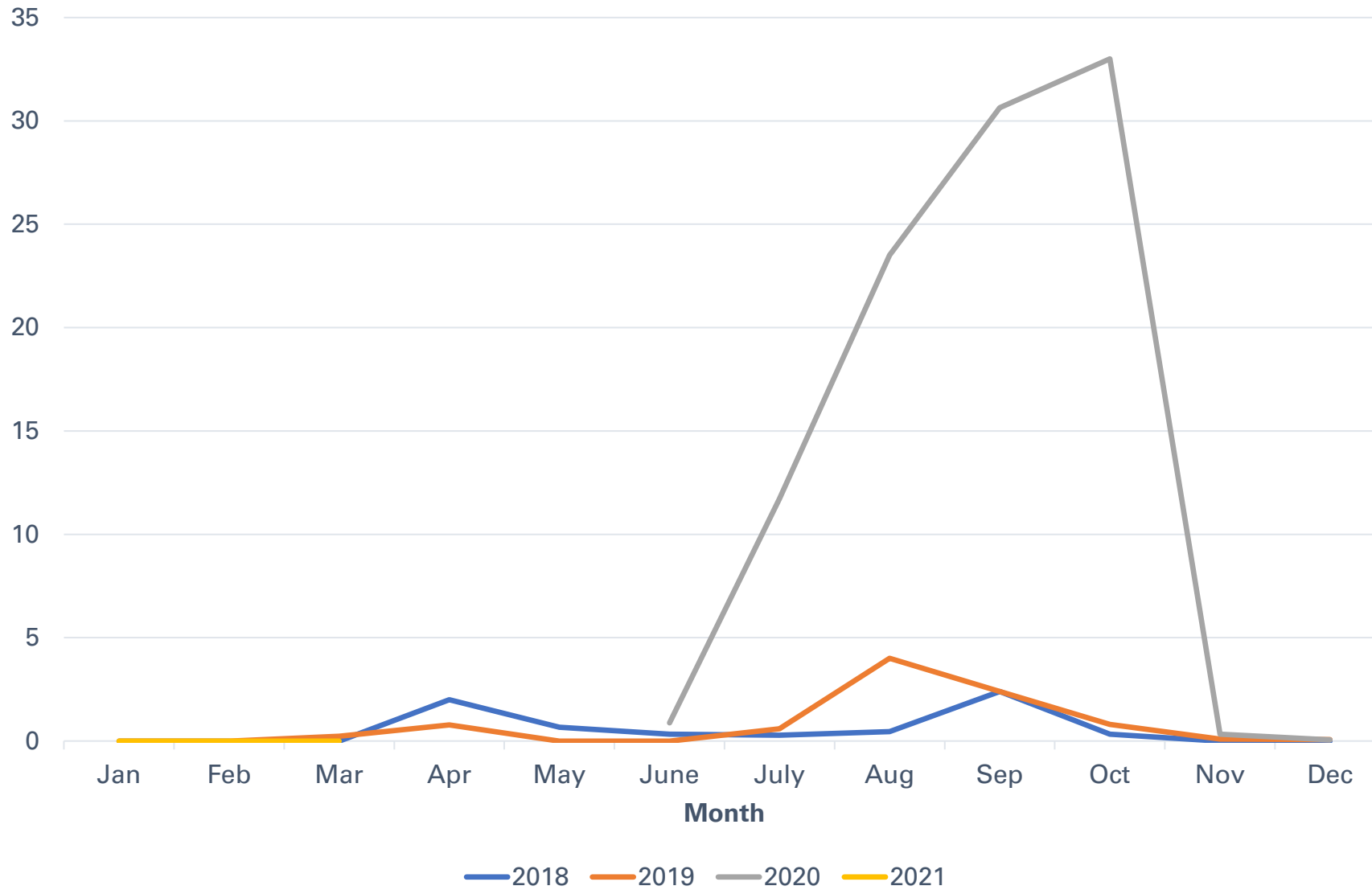
- ▶ Lesser peach tree lure: (E,Z)-3,13-octecadien-1-ol acetate



Average Peach Tree Borer, 2018-2021



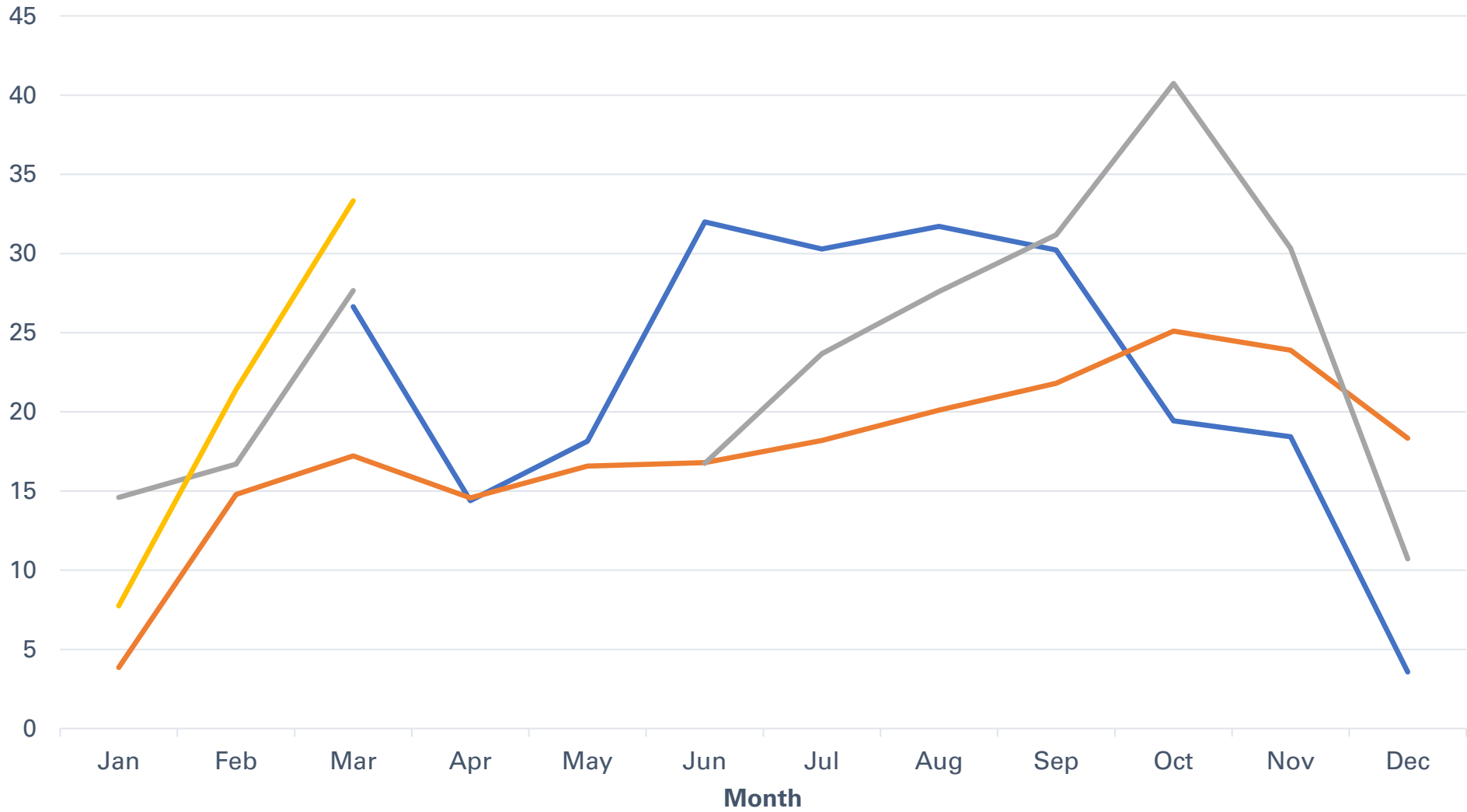
Peach Tree Borers by Year



Lesser Peachtree Borers, 2018-2021



Lesser Peachtree Borers, 2018-2021



— 2018 — 2019 — 2020 — 2021

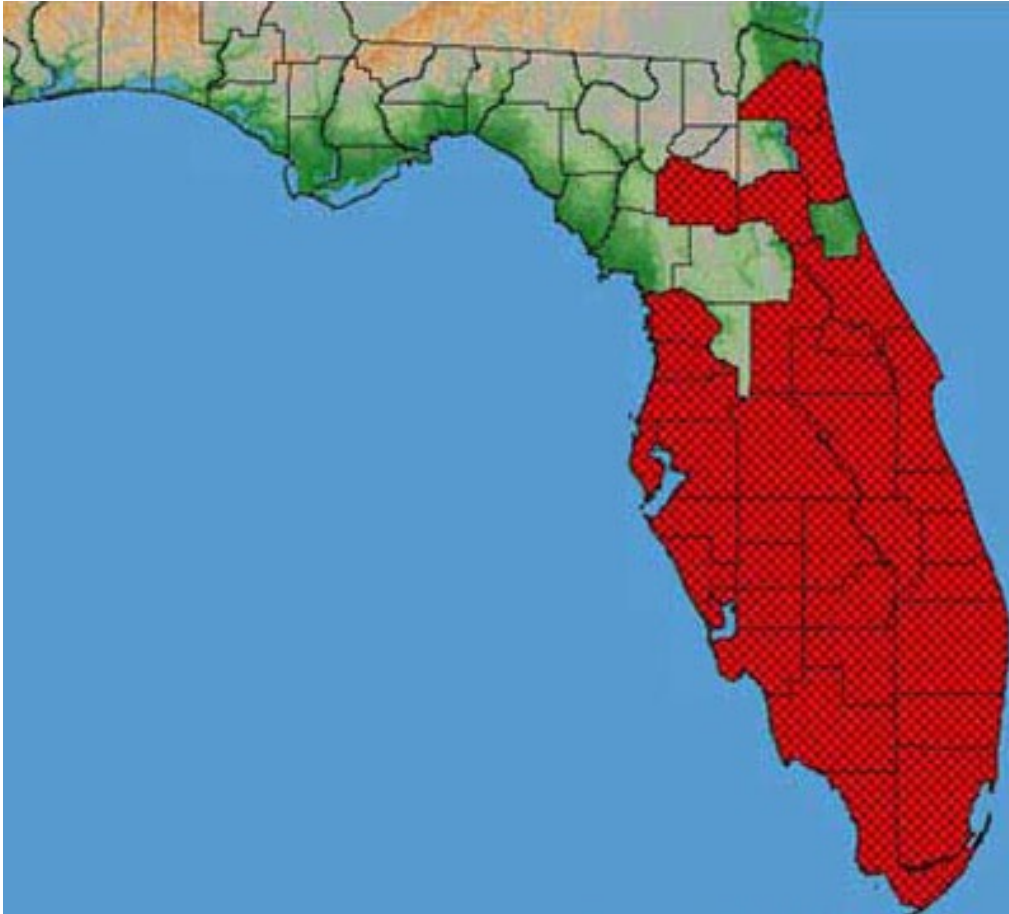
Discussion and Management

- Peachtree Borer peak flight, July-November
- Location and year-specific variation
- Lesser peachtree borer population is more variable
- Other pest applications may help with management
- Cultural-protect trees after pruning
- Mating disruption pheromones
- Single application of Chlorpyrifos (check label)



Image: USDA, ARS

Caribbean Fruit Fly



Caribbean Fruit Fly



- Various trap designs
- Torula yeast as a bait
- FDACS monitoring for certification program

- Most problematic during harvest
- How PHI is needed for products
- GF-120
 - Organic pesticide (Spinosad) combined with a lure
 - Only spray if detected
 - Can also use NuLure + Malathion
- Reduce alternate hosts
 - Loquat, Suriname Cherry, Guava



Caribbean Fruit Fly



DIVISION OF PLANT INDUSTRY
CARIBBEAN FRUIT FLY PROTOCOL PROGRAM
(772) 241-6360



3301-0-03 SOUTH U.S. HIGHWAY 1
FORT PIERCE, FLORIDA 34982-6666

FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES
COMMISSIONER NICOLE "NIKKI" FRIED

PEACHES TO TEXAS CARIBBEAN FRUIT FLY PROTOCOL PROGRAM EASY STEP CERTIFICATION PROCEDURES

Grower Participation:

- Apply for **new** Designated Parcels by submitting Application for Participation form to Protocol office by January 1 of the harvest year. Qualification will be determined by FDACS inspectors according to the Peach Protocol.
- Thirty days prior to harvest, sign Protocol agreement and notify Protocol office to establish traps.
- Twenty-eight days prior to harvest, begin bait spray program as defined in the Peach Protocol.

Harvesting:

- At least one week prior to harvest, contact the Protocol office to sign harvesting compliance agreement.
- One business day before harvest, call Protocol office to verify certification and schedule harvesting inspection.
- Field containers shall contain fruit from only one Designated Parcel.
- Each conveyance traveling by roadway shall be accompanied by a trip ticket containing information as provided for in the harvesting compliance agreement.
- Fruit that has dropped or spilled on the ground shall never be placed in a container with certified fruit, otherwise the entire container shall be considered contaminated and NOT CERTIFIED.

Packinghouse:

- At least 30 days prior to harvest, packinghouse representative shall contact the Protocol office to initiate survey for qualification and to sign compliance agreement.
- At least one business day prior to packing certified fruit, packinghouse representative shall notify the Protocol office to schedule inspection.
- When fruit arrives at the packinghouse, Designated Parcel identification shall be verified against trapping report.
- There shall be adequate space separating certified and non-certified fruit in the coolers, and on the floor.
- Before certified fruit is run, all packing lines shall be checked for fruit from previous run. No fruit shall remain that could jeopardize the certification of the fruit to be run.
- Each carton of certified fruit must be legibly labeled with the wording Designated Parcel, the parcel identification and packing date:

Example: Designated Parcel PCH 16 A
Packing Date: (date of packing)

Billing:

Participation is billed at \$4.00 per acre per month, commencing on trap set date until trap removal at the participant's request. An orchard may be of varying acreage but the minimum billed shall be no less than 40 acres.

For more information: Contact our office at (772) 241-6360

[PEACHES TO TEXAS \(fdacs.gov\)](http://fdacs.gov)

Acknowledgements

- Peach Producers and UF-IFAS Extension
- Biosecurity Research and Extension Lab
 - Dr. Gideon Alake, Sarah Birkmire, Andy Jean-Louis, Shannon McAmis, and Jennifer Carr
- FDACS-DPI Methods Development and Biological Control
- Cory Penca, USDA-APHIS-PPQ Science and Technology
- Lauren Diepenbrock and Michael Rogers UF-CREC
- USDA-NIFA Southern Region IPM project #2015-0085-35
“Foundational Research for the Development of IPM in Florida’s Subtropical Peach Industry”
- USDA-APHIS-PPQ Plant Protection Act 7721