

Invasive Whitefly Pests of Florida



Photos: H. Glenn, UF/IFAS, Tropical Research and Education Center

What are Whiteflies?

- 1,500 species worldwide; at least 60 are in Florida
- Adults are small and look like tiny moths
 - 2 pairs of wings that are covered by a white dust or waxy powder
- Feed on plant fluids with straw-like mouthparts
 - Can transmit plant diseases such as tomato yellow leaf curl and squash leaf curl



Overview of Whiteflies

- Whiteflies may excrete honeydew while feeding
- If sooty mold &/or ants are seen, look for whiteflies



Photos: Stephanie Stocks, Department of Entomology and Nematology, University of Florida; Joseph O'Brien, USDA Forest Service, www.bugwood.org, #1427010

Overview of Whiteflies

- Honeydew and sooty mold can cover non-plant surfaces from nearby infested plants



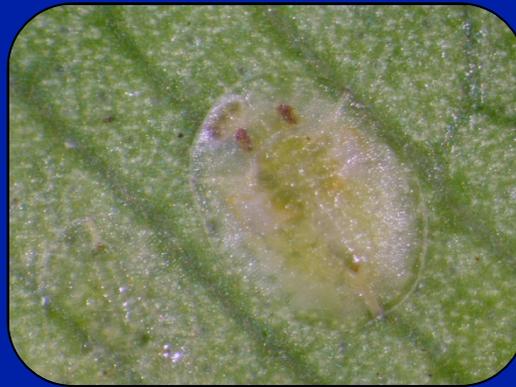
Photos: K. Gabel, UF/IFAS Monroe County Extension; H. Glenn, UF/IFAS Tropical Research and Education Center

Recent Whitefly Issues in South Florida

Bondar's Nesting Whitefly



Ficus Whitefly



Rugose Spiraling Whitefly



Image credits: Bondar's nesting whitefly: nymph – Ian Stocks, Florida Department of Agriculture and Consumer Services, Division of Plant Industry; adult - Lyle Buss, Department of Entomology and Nematology, University of Florida
Ficus whitefly: nymph – Catharine Mannion, UF/IFAS, UF/IFAS, Tropical Research and Education Center; adult – Jeff Lotz, Florida Department of Agriculture and Consumer Services, Division of Plant Industry
Rugose spiraling whitefly: nymph - Lyle Buss, Department of Entomology and Nematology, University of Florida; adult - H. Glenn, UF/IFAS, Tropical Research and Education Center



Bondar's Nesting Whitefly

Paraleyrodes bondari

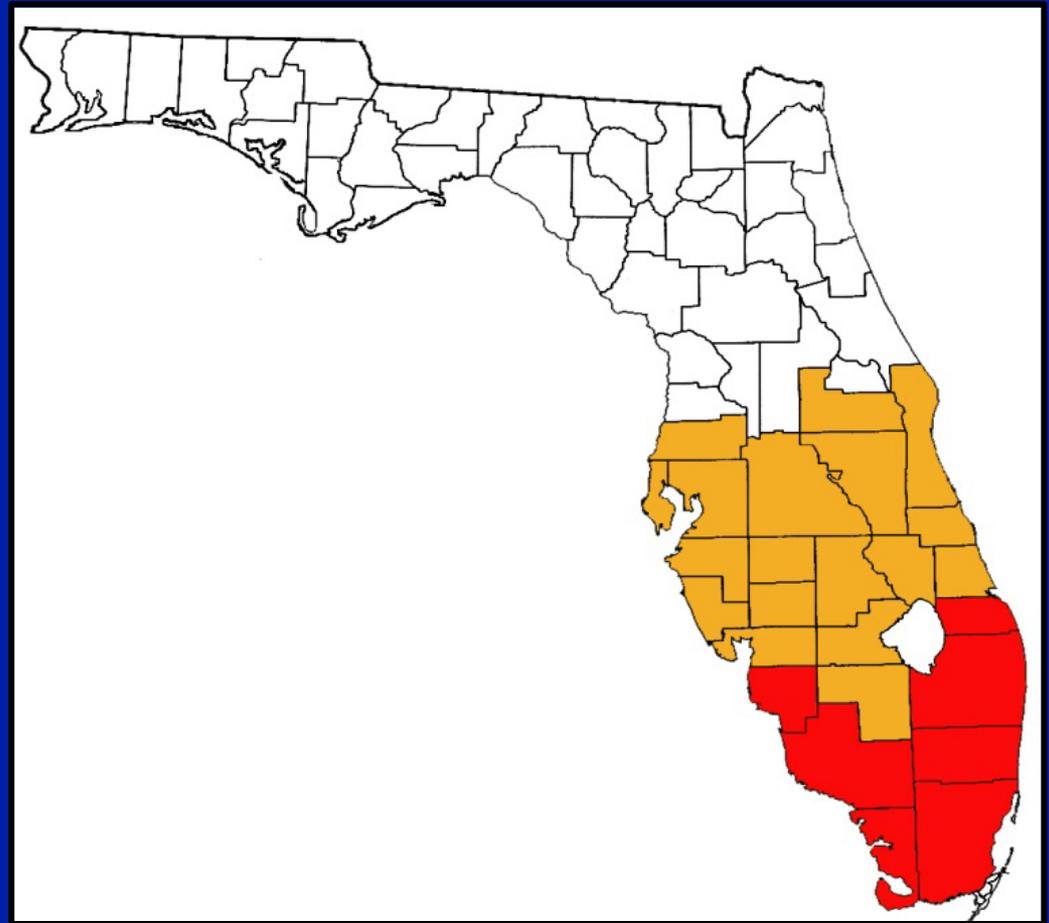
- Native to South America and the Caribbean
- Also detected in Madeira, Comoros, Mauritius, Reunion, Taiwan, Hawaii, Portugal
- Found in Florida in 2011
- Not much is known about its biology or life cycle.

Distribution

Bondar's Nesting Whitefly

Red = Detected in 7 counties so far in southern Florida

Orange = predicted distribution in Florida



Map is based on detection records provided by FDACS-DPI (June 2013).

Bondar's Nesting Whitefly

Paraleyrodes bondari



Photo: Lyle Buss, Department of Entomology and Nematology, University of Florida and Ian Stocks, Florida Department of Agriculture and Consumer Services, Division of Plant Industry



Hosts

Bondar's Nesting Whitefly

- Avocado
- Banyan tree
- Canary laurel or barbusano
- Chinese hibiscus
- Coconut palm
- Guava
- Indian laurel
- Lemon
- Navel orange
- Mandarin orange
- *Chamaedorea* palms
- Surinam cherry
- Sweetsop
- Sapote
- Tilo or stinkwood
- Weeping fig



Damage

Bondar's Nesting Whitefly

Top of leaves



Bottom of leaves





Ficus Whitefly

Singhiella simplex

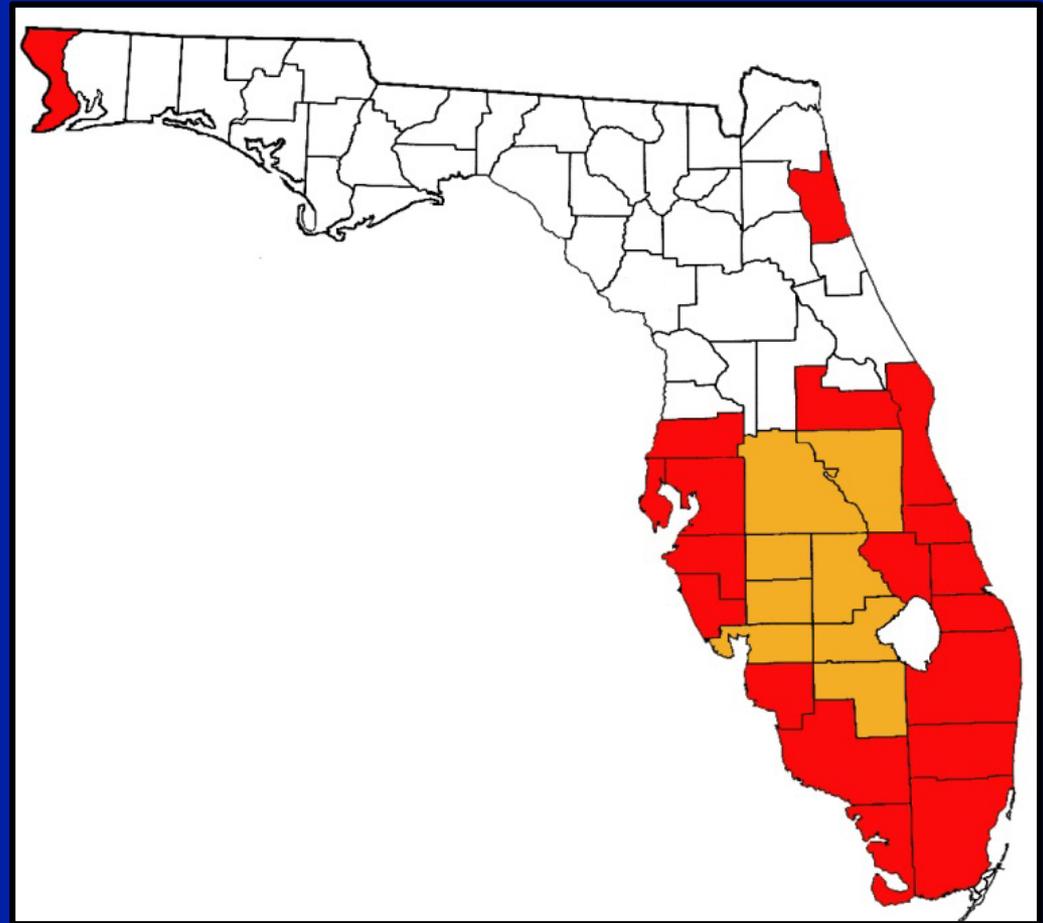
- Native to India, Burma, and China
 - Where it is a known pest of ficus
- Found in Florida in August 2007
- Also known as the **fig whitefly**
- Life cycle lasts about a month, but again varies with temperature.

Distribution

Ficus Whitefly

Red = Detected in 19 counties so far, mostly in southern Florida

Orange = predicted distribution in Florida.



Ficus Whitefly

Singhiella simplex



Photos: H. Glenn, UF/IFAS, Tropical Research and Education Center
and Lyle Buss, Department of Entomology and Nematology, University of Florida

Hosts

Ficus Whitefly

- Weeping fig
- False banyan tree
- Banyan tree
- Cuban laurel
- Strangler fig
- Indian fig
- Fiddle leaf fig
- Banana leaf fig
- Other figs may be susceptible
- Still others, such as Green Island fig, does not seem to be susceptible

Damage

Ficus Whitefly



Photos: A. Hunsberger, UF/IFAS, Miami-Dade County Extension; C. Mannion, UF/IFAS, Tropical REC



Rugose Spiraling Whitefly

Aleurodicus rugioperculatus

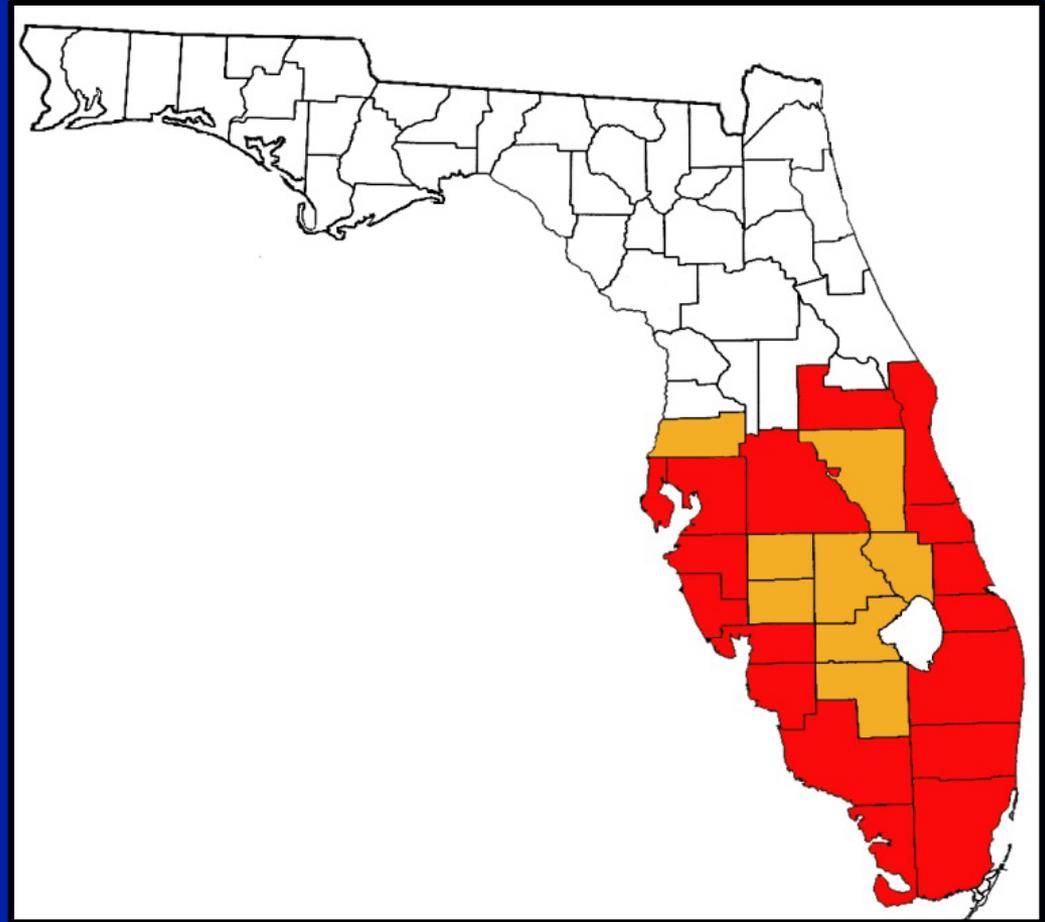
- Native to Central America
- Detected in Florida in 2009 in Miami-Dade County
- Has also been referred to as the gumbo limbo spiraling whitefly
- Life cycle takes about a month, but is also temperature dependent

Distribution

Rugose Spiraling Whitefly

Red = Detected in 17 counties so far, mostly in southern Florida

Orange = predicted distribution in Florida.



Map is based on detection records provided by FDACS-DPI (June 2013).

Rugose Spiraling Whitefly

Aleurodicus rugioperculatus



Photos: H. Glenn, UF/IFAS, Tropical Research and Education Center



Hosts

Rugose Spiraling Whitefly

There are over 90 plant hosts recorded, however, over 60% of all detections are found on:

- gumbo limbo
- Coconut
- *Calophyllum* species
- Avocado
- black olive
- pygmy date palm
- Bird of Paradise
- Christmas palm
- mango



Damage

Rugose Spirling Whitefly



Image credits:
H. Glenn, UF/IFAS, Tropical Research and Education Center



Monitoring Whiteflies

- **Scouting** - it is very important to “keep an eye” on your plants (especially if an infestation is nearby)
- **Early detection** - allows for the best management decisions
 - Ficus whitefly – look for the remains of the pupal skin
 - Rugose spiraling whitefly – look for the spiraling egg patterns
 - Bondar’s nesting whitefly – look for the waxy nests on the leaves

Removing Honeydew & Sooty Mold

- Control pest problem
- Wash off as soon as possible
 - Particularly for cars
- Pressure washing
- Soaps and oils can potentially remove and reduce build up of sooty mold
 - Be careful of plant damage
- Mold remover products – unknown how effective
 - Be especially careful about use on plants



Whitefly Management: Biological Control

- What are natural enemies or biocontrol agents?
 - Important for long term management of pests
- Predators versus parasites or parasitoids
 - Buying and releasing natural enemies

Parasitized nymphs



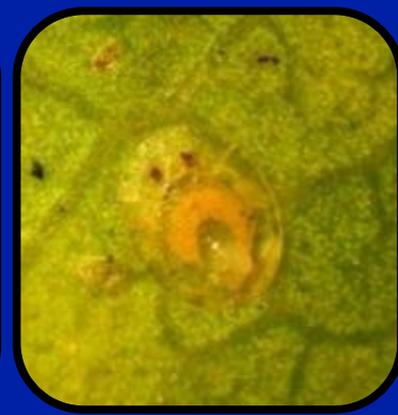
Adult parasites that have emerged leave a circular hole



Parasitized nymphs often dark



Ripped hole = emerged adult fly, NOT PARASITIZED



Parasite is sometimes visible

Whitefly predators



Photos:
Gyorgy Csoka, Hungary Forest Research Institute, www.bugwood.org, #5410810; Forest & Kim Starr, Starr Environmental, www.bugwood.org, #5219057
Lance Osborne, UF/IFAS, Mid-Florida Research and Education Center; Lacewing larva – USDA ARS Photo Unit, USDA Agricultural Research Service, www.bugwood.org, #1323013; Lacewing eggs – Lyle Buss, University of Florida



Whitefly Management: Chemical Control

- Soaps and oils
 - Horticultural oil or insecticidal soap
 - Essentially suffocates the pest
 - Acts on contact, so thorough coverage is needed
 - Repeat applications every 7-10 days
 - Phytotoxicity (burnt leaf tissue) can occur under high temperatures



Whitefly Management: Chemical Control

- Insecticides
 - Sometimes important in the early management of a pest
 - Can effect natural enemies
 - Misuse or overuse can cause problems such as insecticide resistance, secondary pest problems, environmental contamination, and harm to non-target organisms
 - Follow label instructions - The site and method of application must be on the label (e.g., landscape, nursery, etc.)

Foliar Insecticides for Homeowner Use

Trade Name(s)	Active Ingredient
Flower, Fruit & Vegetable Insect Killer (Ortho)	Acetamiprid
Bug - B - Gon Max Lawn & Garden Insect Killer (Ortho)	Bifenthrin
Rose & Flower Insect Killer (Bayer Advanced); Lawn & Garden Insect Killer (Schultz)	Cyfluthrin
Triazicide Once & Done Insect Killer (Spectracide)	Lambda - cyhalothrin
Indoor/Outdoor Broad Use Insecticide (Hi-Yield)	Permethrin
Yard & Garden Insect Killer (Bonide); Rose & Flower Insect Spray (Spectracide)	Pyrethrin



Conditions that Affect Whitefly Management

- Rugose spiraling whitefly and Bondar's nesting whitefly
 - Less rain makes the infestations appear worse
 - Large host range makes them difficult to manage
 - Excessive wax can affect contact between the insect and the insecticide
- Ficus whitefly
 - Be patient while the leaves come back and check the health of your ficus often
 - Try not to prune during recovery



How to Help Whitefly-Damaged Plants to Recover

- Proper fertilization and watering
 - However, over-fertilizing will actually help the pests and lead to run-off issues
- Beware: Nothing changes overnight and it sometimes takes time for plant recovery



Whitefly Management: Cultural Control

- Use alternative or non-host plants when possible
- If moving infested plant material, bag it or cover it!
- Be sure not to spread the infestation
- Wash plants with water

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Partnering Agencies



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



University of Florida, Department of Entomology and Nematology



Pest Management University



IPM Florida



IFAS Extension – Broward County



IFAS Extension – Lee County



IFAS Extension – Miami-Dade County



IFAS Extension – Palm Beach County



Southern Plant Diagnostic Network

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