UF | IFAS Extension
UNIVERSITY of FLORIDA

Phantasma Scale

Fiorinia phantasma

FLORIDA FIRST DETECTOR

Overview

Phantasma scale on palm seed

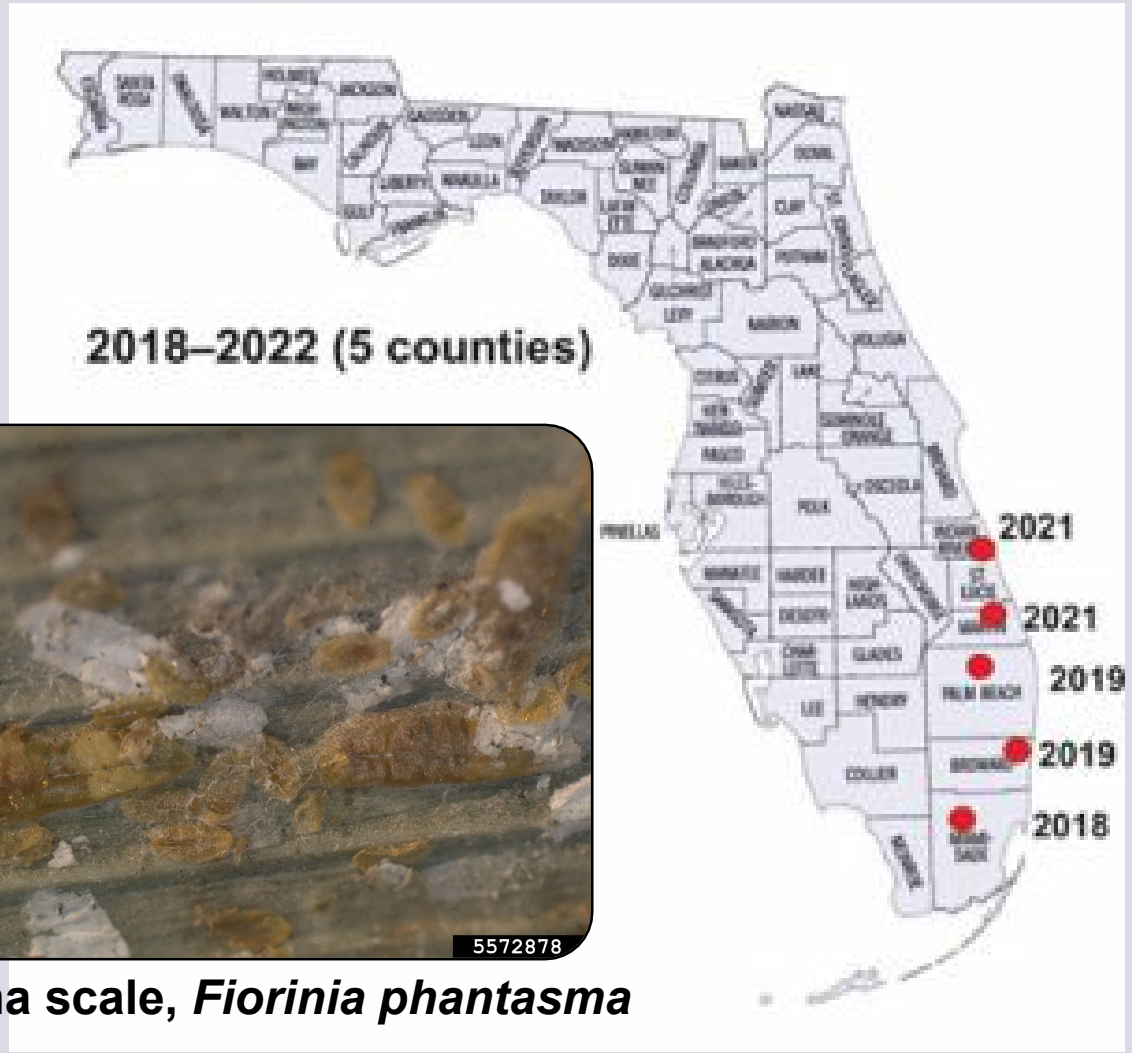
- Fiorinia phantasma (Diaspididae/Armored Scale)
- Particularly prevalent on palms, which are part of the family Arecaceae
- Has the potential to cause significant economic harm to ornamental growers, homeowners, and landscapers in Florida

Canary Island Date Palm
Phoenix canariensis

Photo: Mid-Florida Research and Education Center; Muhammad 'Zee' Ahmed, USDA-ARS

Origin and Distribution

- Origin: Asia, The Philippines
- Distributed in 23 countries including USA
- First detected in FL in 2018 in Miami Dade
- It has been detected in 4 more Counties Broward, Palm Beach, St. Lucie, and Martin.

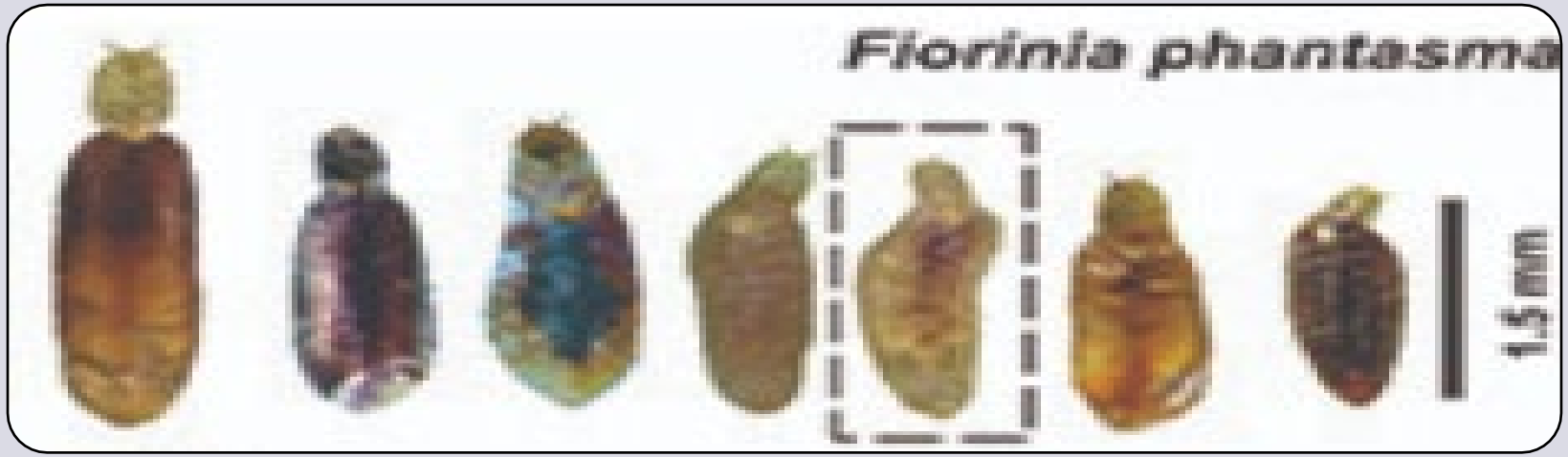


Phantasma scale, *Fiorinia phantasma*

Photo: Map - FDACS-DPI-Database 2022; Muhammad.Z Ahmed, Florida Department of Agriculture and Consumer Services, Bugwood.org, # 5572878

Dispersal

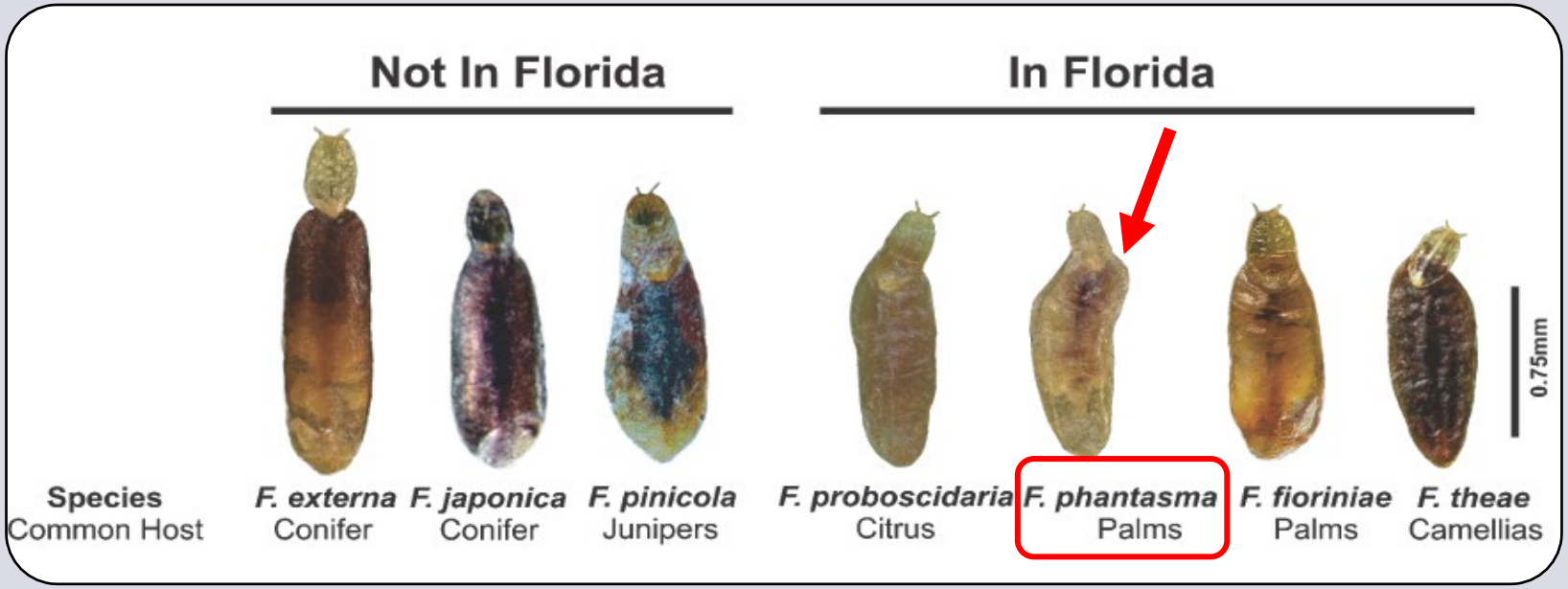
Phantasma scale size and shape in comparison to other armored scale species.

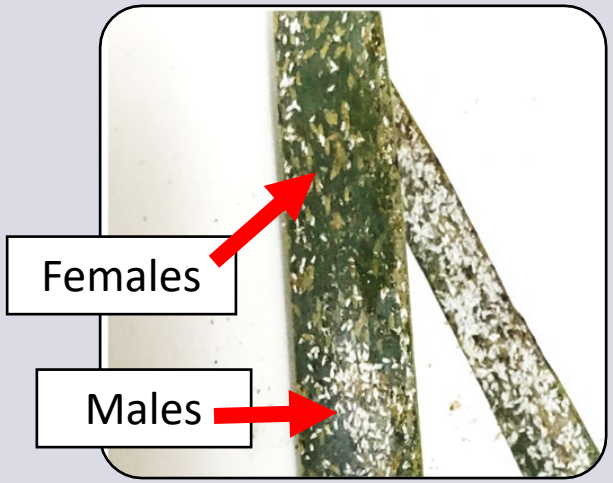


- Spread by dispersing in the wind, riding on mammals or birds, transferred through nursey plant sales if scale is on the plants, or being carried on contaminated plant material or gardening tools

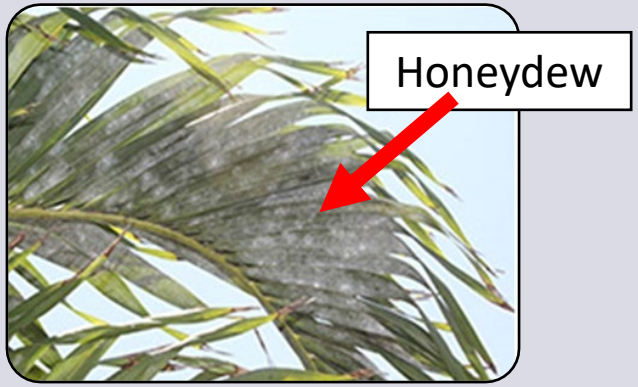
Photo: Muhammad 'Zee' Ahmed, USDA-ARS

Identification





Phantasma scale on palm



Rugose spiraling whitefly
Aleurodicus rugioperculatus

Pygmy date palm - Coconut mealybug damage

Photo: Bottom left - Muhammad 'Zee' Ahmed; Bottom middle - Vivek Kumar, University of Florida; Bottom right – Scot Nelson and Mike Nago, University of Hawaii at Manoa

Life cycle

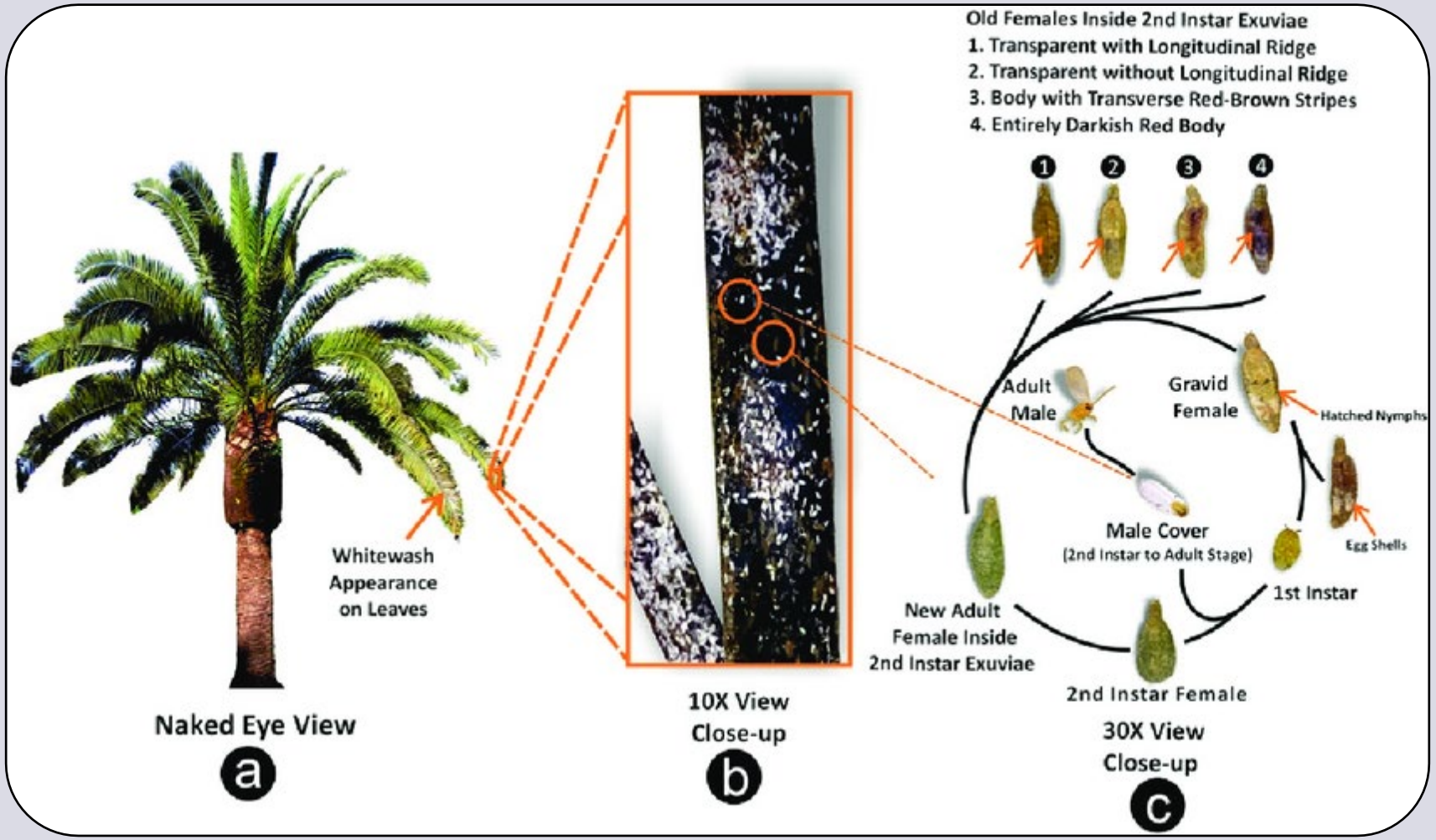


Photo: M. Z. Ahmed, G. Ouwinga, and L. Deeter

Hosts

Canary Island Date Palm, *Phoenix canariensis*

Natal Plum, *Carissa macrocarpa*

Brazilian Pepper tree, *Schinus terebinthifolia*

Tahitian Screw-pine, *Pandanus tectorius*

Japanese Cheesewood, *Pittosporum tobira*

Bird of Paradise, *Strelitzia reginae*

Photo: Top - Muhammad 'Zee' Ahmed, USDA-ARS; John Ruter, University of Georgia, Bugwood.org, #1582060; Amy Ferriter, State of Idaho, Bugwood.org, #UGA1461045; Bottom - Forest and Kim Starr, Starr Environmental, Bugwood.org, #5412385; Rebekah D. Wallace, University of Georgia, Bugwood.org, #5423534; Scott Bauer, USDA Agricultural Research Service, Bugwood.org, #UGA1318027

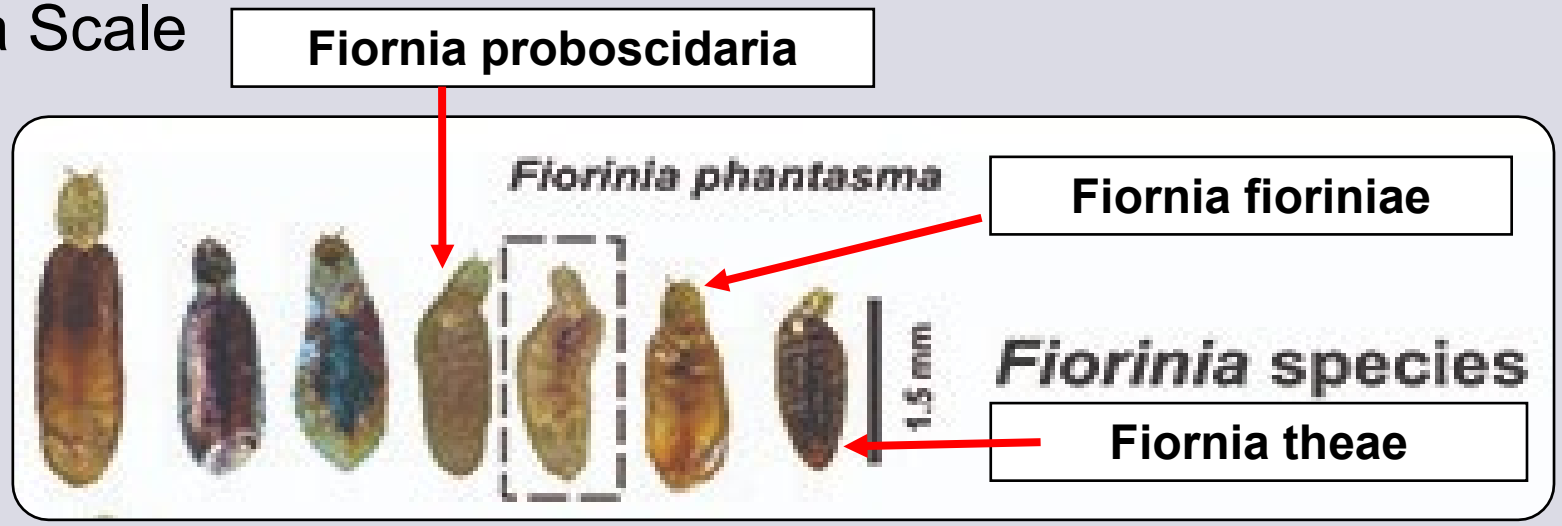
Damage

- Palm trees are of particular concern due to their significant economic and ornamental value
- The palm industry in Florida alone is worth $400 million annually
- Phantasma Scale leads to the loss of fronds from palm trees, stunted growth, and chlorosis causing both economic damage and aesthetic issues

Photo: Top - Muhammad 'Zee' Ahmed, USDA-ARS; Bottom - Mid-Florida Research and Education Center

Challenges in Control

- Look alike species in Florida, such as *Fiorinia fioriniae* and *Fiorinia proboscidaria*, makes detection difficult
- Scale insects' protective covering limits the effectiveness of contact insecticides and traditional pest control methods
- Traditional pest control methods are often not effective against Phantasma Scale



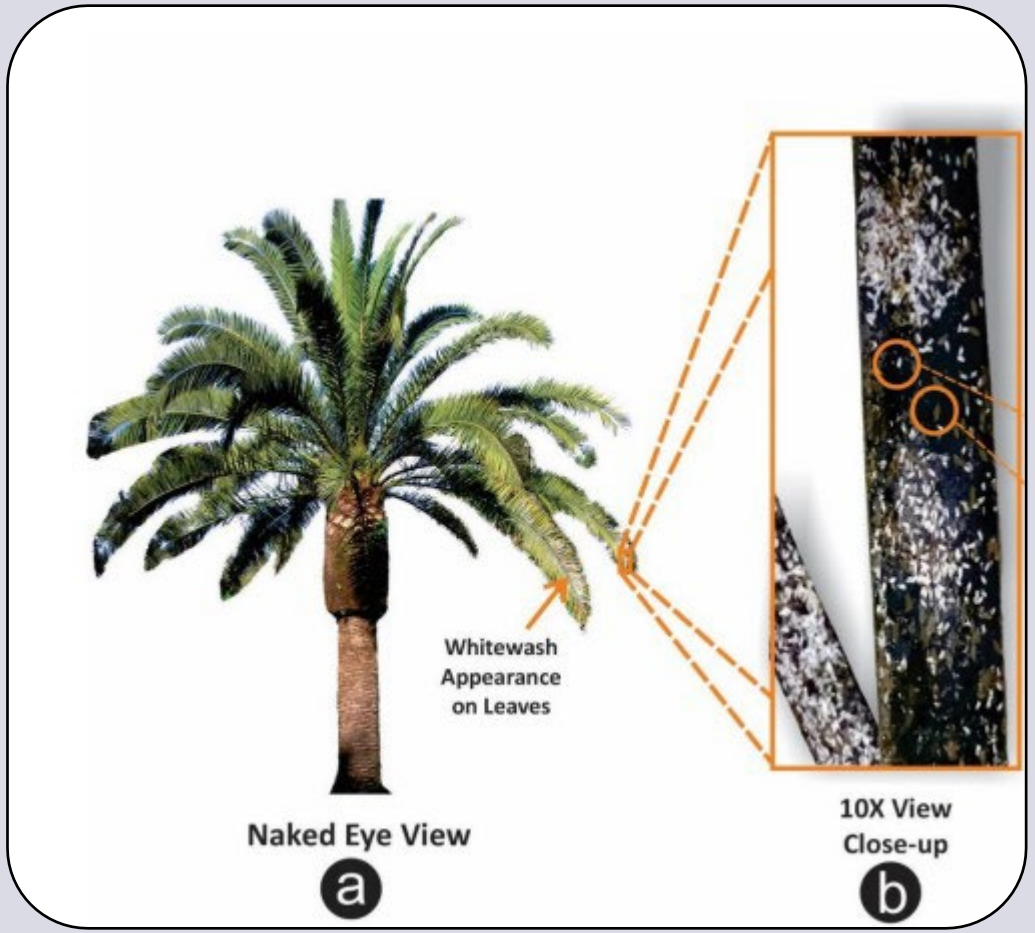
Comparison of size and shape of *F. phantasma* to other Fiorinia species

Photo: Mid-Florida Research and Education Center

Prevention and Detection

- Careful inspection of nursery plants and horticultural tools
- Identification information to distinguish Phantasma Scale from look-alike species

Scouting



Magnified view of phantasma scale infestation

Photo: Crop Defenders; M. Z. Ahmed, G. Ouwinga, and L. Deeter

Mechanical Control

- High-pressure water sprays and hand-picking are two viable mechanical control techniques.
- Website - Disinfect tools: Disinfecting Your Garden Tools – Gardening Solutions (ufl.edu)

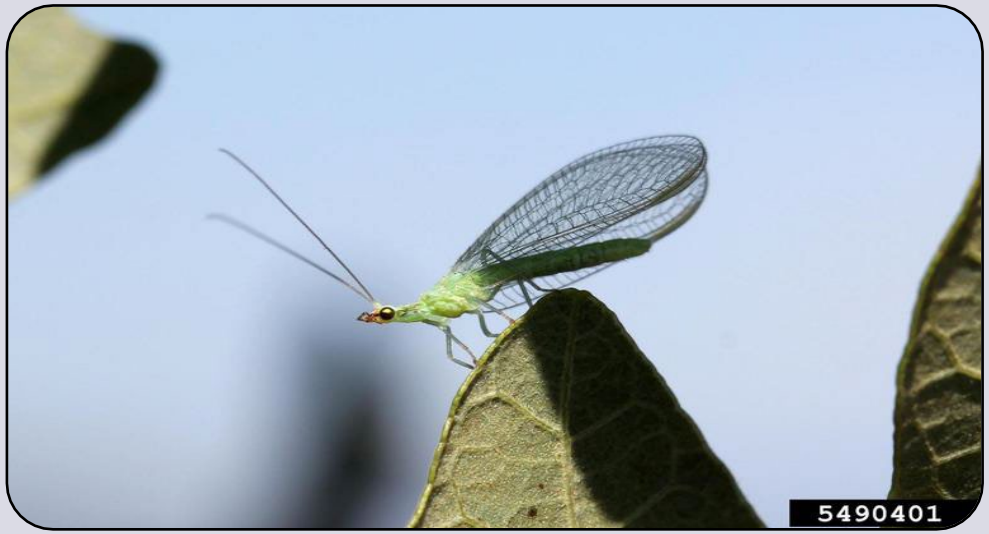
Remove infested fronds

High pressure water sprayer

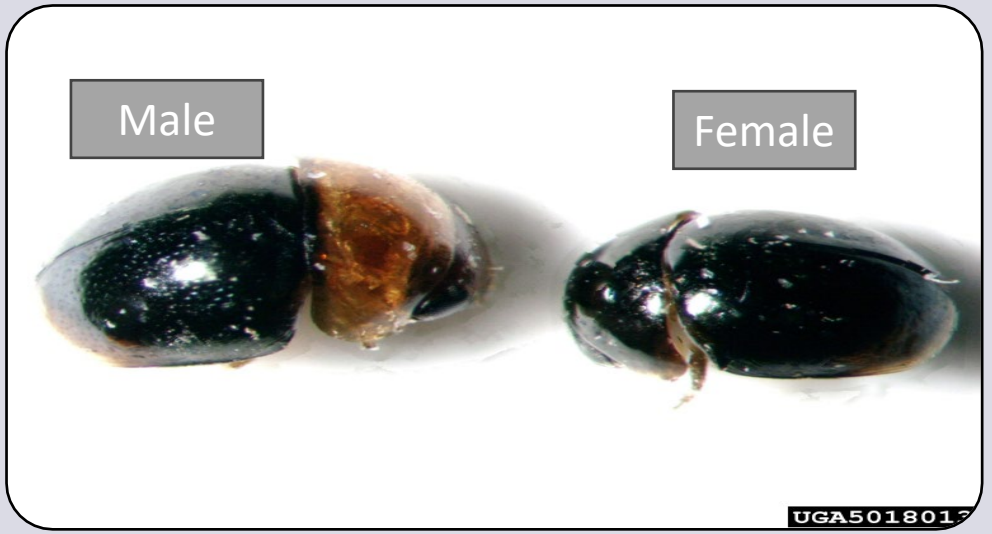
Photo: Olivia Williams – Ecocation.org; Paul A. Mistretta, USDA Forest Service, Bugwood.org, #1520062

Biological control

- They are susceptible to attack by a range of natural enemies such as lady beetles, lacewings, predatory mites, parasitoid wasps and thrips.
- This biological control method is seen as a promising strategy for managing the Phantasma scale problem



Green lacewings, Genus Chrysoperla



Scale picnic beetle, *Cybocephalus nipponicus*

Photo: Whitney Cranshaw, Colorado State University, Bugwood.org, #5490401; Pennsylvania Department of Conservation and Natural Resources - Forestry , Bugwood.org, #5018013

Chemical Control: What to Consider?

- They have feeding behavior and life cycles that make them less susceptible to systemic insecticides and contact insecticides
- The "crawlers" stage is the most susceptible to contact insecticides as they do not have protective coverings
- Timing is crucial
- The use of horticultural oils and insecticidal soap can help conserve resident natural enemies while controlling scale populations.

Chemical Control

- Some chemical controls can include acetamiprid, dinotefuran, pyriproxyfen, and mineral oils
  - Use multiple classes of chemical can prevent insect resistance
- Spot treatment recommended
- **Label is the law.**
  - Contact extension office for recommendations on chemical control

Applying contact insecticide in palm tree foliage.

Photo: Mark Hoddle and Ivan Milosavljevic – University of California Riverside

Reporting to UF/IFAS Faculty in Florida

- Local county extension office

https://sfyl.ifas.ufl.edu/find-your-local-office/

- Insect ID Lab - Dr. Lyle Buss

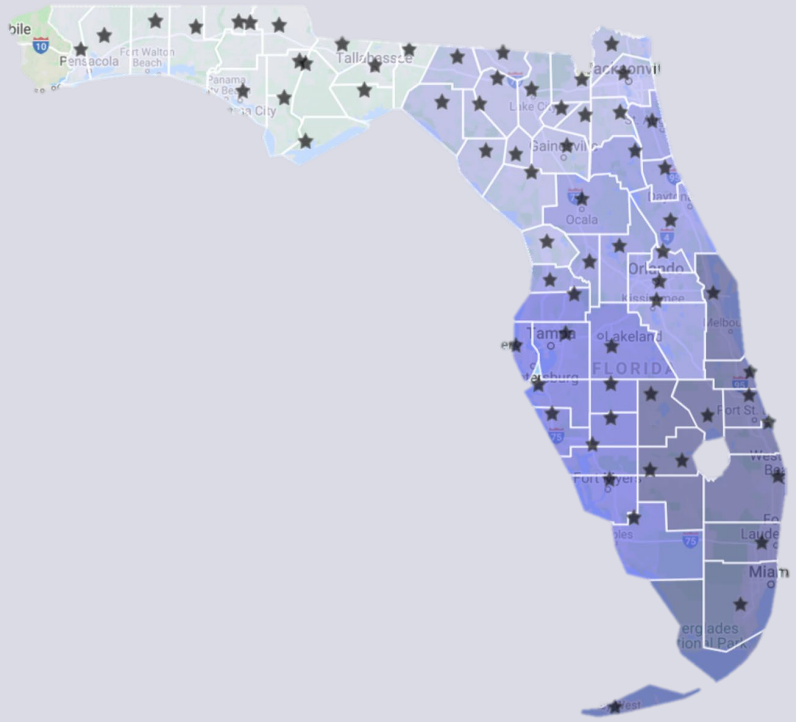
http://entnemdept.ufl.edu/insectid/

- Nematode Diagnostic Lab - Dr. Billy Crow

http://nematology.ifas.ufl.edu/assaylab/index.html

- Plant Diagnostic Center - Dr. Carrie Harmon

https://plantpath.ifas.ufl.edu/extension/plant-diagnostic-center/



Reporting to FDACS-DPI in Florida

Florida Department of Agriculture and Consumer Services (FDACS) - Division of Plant Industry (DPI)

- FDACS, DPI Responsibility
  - Announcing detection or establishment of new invasive species.
  - Reporting is a legal obligation under Florida Statute 581.091.
- Submission Form
  - http://forms.freshfromflorida.com/08400.pdf
  - https://www.fdacs.gov/Agriculture-Industry/Pests-and-Diseases/How-to-Submit-a-Sample-for-Identification

FDACS, DPI Contact

- Dr. Leroy Whilby, Bureau Chief-Entomology, Nematology and Plant Pathology
  - 352-395-4661
  - Leroy.whilby@freshfromflorida.com
- Dr. Paul Skelley, Assistant Chief-Entomology, Nematology and Plant Pathology
  - 352-395-4678
  - Paul.skelley@freshfromflorida.com
- Division of Plant Industry Hotline
  - 1-888-397-1517
  - DPIHelpline@FDACS.gov

Reporting using DDIS in Florida

Digital Diagnostic and Identification System (DDIS)

- Digital Diagnostic Collaboration
  - Extension agents
  - Laboratories
  - Clinics
  - Specialists
- https://ddis.ifas.ufl.edu/

Find More Information At:

https://entnemdept.ufl.edu/ffd/

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Collaborating Agencies

- U.S. Department of Agriculture Animal and Plant Health Inspection Service (USDA-APHIS)
- Cooperative Agricultural Pest Survey Program (CAPS)
- Florida Department of Agriculture and Consumer Services (FDACS)
- National Plant Diagnostic Network (NPDN)
- Sentinel Plant Network (SPN)
- University of Florida Institute of Food and Agricultural Sciences (UF-IFAS)
- Protect U.S.

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- Citation:
  - University of Florida, Entomology and Nematology Department, Biosecurity Research and Education Lab. May 2016. Phantasma Scale, Day Accessed

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