Another New Scale in Florida

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Photo: H. Glenn, UF/IFAS
Exotic Soft Scale
(Hemiptera: Coccidae)

- **2008** – Reported from Monroe County on croton
- Continues to spread and now found in several southern Florida Counties
- New to science; it is currently being described
- Hosts – Numerous ornamental and fruit host; many native plants in Florida

Photo: H. Glenn, UF/IFAS
Exotic Soft Scale

• Initially identified as *Philephedra* sp. nr. *crescentiae* (Cockerell)
• Does not produce an egg sac
• It was then determined to most likely be an undescribed species in an undescribed genus of unknown origin.

Photo: K. Amarsakare, UF/IFAS
Host Range

• Polyphagous species
• Over 50 host species recorded in Florida
• In retail, it is moving around on croton
• In landscapes, other popular plants include ficus species, gumbo limbo and annona species.
Distribution

• Has been reported in the following Counties:
  – Brevard, Broward, Collier, Duval, Hernando, Highlands, Hillsborough, Indian River, Lake, Lee, Marion, Miami-Dade, Monroe, Orange, Osceola, Palm Beach, Pinellas, Putnam, St. Lucie, Sarasota, Seminole

• Established in the following Counties (found in environs): Broward, Lee, Miami-Dade, Monroe, Palm Beach.
Adult Females

• Greenish yellow appearance with dark striations
• Approximately 2.3 x 1.4 mm

Photos: K. Amarsakare, UF/IFAS
Adult Males

- Small orange bodied gnat-like insects with white wax tail filaments
- Approximately 3.0 x 0.6 mm

Photos: K. Amarsakare, UF/IFAS
Immature States

• First Instar

• Second Instar

• Third instar – female

• Third instar - male

Photos: K. Amarsakare, UF/IFAS
## Development on Croton

<table>
<thead>
<tr>
<th></th>
<th>Mean Days (± SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First</strong></td>
<td>12.6 ± 0.6</td>
</tr>
<tr>
<td><strong>Second</strong></td>
<td>Male: 10.4 ± 1.3, Female: 11.6 ± 0.89</td>
</tr>
<tr>
<td><strong>Third</strong></td>
<td>Male: 3.9 ± 0.8, Female: 6.9 ± 0.97</td>
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<tr>
<td><strong>Fourth</strong></td>
<td>2.8 ± 0.8</td>
</tr>
<tr>
<td><strong>Adult (cumulative)</strong></td>
<td>Male: 29.7 ± 1.9, Female: 31.1 ± 2.1</td>
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</tbody>
</table>
Reproduction

Each female lays an average of 388 eggs

Photo: H. Glenn and K. Amarsakare, UF/IFAS
Similar Scale Species

Philephedra tuberculosa  (produces egg sac)
New Scale

Philephedra tuberculosa

Uniform green in color

Mottled, green with black specks

Photos: G. Hodges, DPI/FDOACS
**Philephedra tuberculosa**

- Adult female produces a large white egg sac (the new scale does not produce an egg sac)

Photos: G. Hodges, DPI/FDOACS
Similar Scale Species

Young females of urbicola and green shield scale

Urbicola scale

Green shield scale
Damage

Can build rapidly to high densities on some hosts; plant decline

Photo: H. Glenn, UF/IFAS
Damage

- Plant decline; leaf drop
- Excessive amount of honeydew and sooty mold

Photo: C. Mannion, UF/IFAS
Masses of immature males

Adult and immature females

Photos: G. Hodges, DPI/FDOACS
Other Common Scales
Associated with Sooty Mold

Soft scales (green scale, green shield scale, mango scale, *Philephedra* sp., wax scale, nigra scale)

Photos: G. Hodges, DPI/FDOACS
Other Common Scales Associated with Sooty Mold

- **Kermesidae**
  - Allokermes species (oak gall scales), only on *Quercus* species

- **Kerriidae**
  - *Paratachardina pseudolobobata* (Lobate lac scale), multiple hosts

Photos: G. Hodges, DPI/FDOACS
Other Common Scales Associated with Sooty Mold

• Pseudococcidae
  – Mealybugs

• Margarodidae
  – *Icerya purchasi* (Cottony cushion scale)

Photos: G. Hodges, DPI/FDOACS
Natural Enemies

• Several natural enemies have been identified
• Most common is the predator, *Cryptolaemus* sp. (mealybug destroyer)
Predator: Mealybug Destroyer

• In the landscape – confusion that this predator is the cause of plant damage/decline

Photos: C. Mannion, UF/IFAS
Natural Enemies

- *Metaphycus flavus*
- Parasite of soft scales; commercially available

Photo: H. Glenn, UF/IFAS
Natural Enemies

- Predator: *Laelilla coccidivora*

Photo: H. Glenn, UF/IFAS
Scale Management

• Monitoring and detection
  – Inspect all plant parts closely
  – Presence of honeydew, sooty mold and ants
    • Could also be other scales or insects

• Biological control
  – Conserve natural enemies (numerous predators and parasites occur naturally which can provide good control)
  – Release natural enemies (need proper identification of pest)
Scale Management

• Oils and soaps
  – Requires frequent application and thorough coverage

• Insecticides/Insect Growth Regulators
  – Contact sprays are most effective against the crawler stage; thorough coverage is critical
  – Systemic insecticides
  – Rotate among insecticide groups

• Methods of insecticide application
  – Foliar application
  – Soil application (drench, granular formulations, injection)
  – Tree injection
  – Bark spray
<table>
<thead>
<tr>
<th><strong>Chemical Name</strong></th>
<th><strong>Florida Registered Products</strong></th>
<th><strong>Chemical Class</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyfluthrin</td>
<td>Bayer Advanced Garden Power Force Multi-Insect Killer</td>
<td>Pyrethroid</td>
</tr>
<tr>
<td>Dysulfoton</td>
<td>Bayer Advanced Garden 2-in-1 Systemic Azalea, Camellia &amp; Rhododendron Care</td>
<td>Organophosphate</td>
</tr>
<tr>
<td>Imidacloprid</td>
<td>Bayer Advanced Garden Tree &amp; Shrub Insect Control</td>
<td>Neonicotinoid</td>
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<td>Potassium salts</td>
<td>M-pede; Safer’s soap</td>
<td>Insecticidal soap</td>
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<tr>
<td>Permethrin</td>
<td>Spectracide Rose &amp; Flower Insect Spray</td>
<td>Botanical</td>
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# Examples of Professional Pesticide Options

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<tr>
<th>Chemical Name</th>
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<tbody>
<tr>
<td>Acephate</td>
<td>Acephate Pro 75</td>
<td>Organophosphate</td>
</tr>
<tr>
<td></td>
<td>Orthene TT&amp;O Spray 97, WSP</td>
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<tr>
<td>Acetamiprid</td>
<td>TriStar</td>
<td>Neonicotinoid</td>
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<tr>
<td>Azadirachtin</td>
<td>Azatin XL Plus</td>
<td>IGR</td>
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<tr>
<td>Bifenthrin</td>
<td>Talstar Flowable; GC; Nursery Flowable</td>
<td>Pyrethroid</td>
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<tr>
<td>Carbaryl</td>
<td>Sevin SL; 80 WSP</td>
<td>Carbamate</td>
</tr>
<tr>
<td>Clothianidin</td>
<td>Arena; Aloft*</td>
<td>Neonicotinoid</td>
</tr>
<tr>
<td>Cyfluthrin</td>
<td>Tempo 20 WP GC; Power Pak</td>
<td>Pyrethroid</td>
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<tr>
<td></td>
<td>Tempo Ultra</td>
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<td>Tempo 2</td>
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<tr>
<td>Deltamethrin</td>
<td>DeltaGard GC 5SC; T&amp;O 5SC</td>
<td>Pyrethroid</td>
</tr>
<tr>
<td>Dinotefuran</td>
<td>Safari 20 SG</td>
<td>Neonicotinoid</td>
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<tr>
<td>Fenpropathrin</td>
<td>Tame 2.4 EC Spray</td>
<td>Fenpropathrin</td>
</tr>
<tr>
<td>Fish Oil</td>
<td>Organocide</td>
<td>Biorational</td>
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<tr>
<td>Horticultural Oil</td>
<td>Triact 70</td>
<td>Biorational</td>
</tr>
<tr>
<td></td>
<td>Sunspray 6E</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sunspray 11E</td>
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<tr>
<td></td>
<td>Volck</td>
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<tr>
<td>Imidacloprid</td>
<td>Marathon 1%; 60 G &amp; N in WSP, II; Discus*</td>
<td>Neonicotinoid</td>
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<tr>
<td></td>
<td>Merit 2; 75; Allectus*</td>
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<td>Coretect</td>
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<tr>
<td>Lambda-cyhalothrin</td>
<td>Scimitar CS</td>
<td>Pyrethroid</td>
</tr>
<tr>
<td></td>
<td>Scimitar WP, WSP</td>
<td></td>
</tr>
<tr>
<td>Malathion</td>
<td>Malathion 5, 57EC, 8, 8-E, 8F</td>
<td>Organophosphate</td>
</tr>
<tr>
<td>Permethrin</td>
<td>Permethrin Pro</td>
<td>Pyrethroid</td>
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<tr>
<td></td>
<td>Termite-Turf</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ornamental</td>
<td></td>
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<tr>
<td>Potassium salts</td>
<td>Insecticidal Soap</td>
<td>Insecticidal soap</td>
</tr>
<tr>
<td>Pyriproxyfen</td>
<td>Distance</td>
<td>IGR</td>
</tr>
<tr>
<td>Thiamethoxam</td>
<td>Flagship 25 WG; Meridian</td>
<td>Neonicotinoid</td>
</tr>
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* Combination products – neonicotinoid + pyrethroid

Scale Insects and Mealybugs on Ornamental Plants; Pub. ENY-323; http://edis.ifas.ufl.edu/MG005
New Soft Scale

- Wide host range
  - Favorites in South Florida include crotons and gumbo limbo
- Excessive honeydew and sooty mold
  - Do not confuse with other scales
- Plant decline and leaf drop
- Life cycle – approximately one month
- Several natural enemies found
- Insecticides may be necessary for serious infestations
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