

## NEW INSECT PESTS OF SOUTH FLORIDA

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**Abstract.** South Florida has several major ports of entry and one of the busiest airports in the country allowing for a great influx of international trade and tourism. Along with imported commodities and people, insects are frequent hitchhikers, with an average of one new insect species becoming established a month in south Florida. Many of these become either economic or aesthetic pests. The most concerning of these new insects includes: the lobate lac scale (*Paratachardina lobata lobata* Chamberlin), pink hibiscus mealybug (*Maconellicoccus hirsutus* Green), Sri Lanka weevil (*Myloccerus undatus* Marshall), and tabebuia thrips (*Holopothrips* cf. *inquilinus* Bournier). All, except for the tabebuia thrips, have a wide host plant range, which includes many commonly grown ornamentals, and pose a significant threat to agricultural crops. In addition, little is known about their biology. Recent findings including possible biological control agents will be discussed.

### Why South Florida?

South Florida seems to be the Mecca for new insect pests, with a rate of one new species becoming established per month. But why? There are several points of entry into south Florida: Miami International Airport, Port of Miami, Port Everglades in Broward County, and Ft. Lauderdale-Hollywood International Airport. Through these ports, Florida receives over 80% of plant material for propagation and over 70% of all cut flowers imported into the United States (Shannon, 1999). Shannon (1999) also states "the port of Miami is the

third largest cargo port in the world with over 70 million passengers passing through Miami by the year 2010." For instance, USDA-APHIS-Plant Protection Quarantine at Miami intercepts about 11,600 pests per year as hitchhikers on cargo, food, plant material, international mail, and passenger baggage but can only inspect 1-2% of all shipments (Klassen et al., 2002). Fortunately, the majority of exotic pests fail to become established.

Another factor is that south Florida is in close proximity to the Caribbean and has a tropical/sub-tropical climate, which makes it very vulnerable to exotic pest introductions. Once pests are introduced, they can spread naturally, and by plant movement by homeowners, landscape maintenance, and agriculture.

Once pests get into the ornamental plant nursery trade, they spread quickly throughout Florida and in some cases, other states. For instance, the cycad aulacaspis scale (*Aulacaspis yasumatsui* Takagi) was found in Miami in 1996 infesting cycads and is now established in 31 Florida counties (Hodges et al., 2003), and has been reported in Georgia, Texas, and Hawaii.

Recently introduced exotic insects causing the most concern in south Florida includes: the lobate lac scale (*Paratachardina lobata lobata* Chamberlin), the pink hibiscus mealybug (*Maconellicoccus hirsutus* Green), the Sri Lanka weevil (*Myloccerus undatus* Marshall), and tabebuia thrips (*Holopothrips* cf. *inquilinus* Bournier). A brief summary of these species follows. However it is beyond the scope of this paper to provide detailed descriptions or known biology of each.

### Lobate Lac Scale, *Paratachardina lobata lobata* Chamberlin

The lobate lac scale, *Paratachardina lobata lobata* Chamberlin (Hemiptera: Sternorrhyncha: Coccoidea: Keriidae), is a scale insect native to India and Sri Lanka. It was first reported in the Western hemisphere from the Bahamas in 1992. The first U.S. find was in Davie, Broward County in August 1999. It has spread quickly and by May 2003, has infested the Counties of Miami-Dade, Broward, Palm Beach, Collier, and Hen-

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dry, and the Everglades National Park. This pest is considered "... potentially one of the most devastating pests of trees and shrubs in the state's history" (Howard et al., 2002). There is a high potential for spread throughout the warm areas in the western hemisphere where there is movement of plant material from Florida.

Lobate lac scale has four distinctive lobes giving it a bow-tie shape especially when viewed under magnification, and is a dull black due to a coating of sooty mold. The first instars (crawlers) are a bright to deep red color and after molting, they produce a thick resinous scale covering, making chemical control difficult. The lobate lac scale is found only on woody plant portions such as twigs and branches that are less than 2 cm in diameter, never on foliage. High populations build up and can completely cover stem tissue in highly susceptible hosts such as wax myrtle.

Over 120 species in 44 families including 39 species of Florida native plants are listed on the ever-increasing Florida host plant list for the lobate lac scale (Howard et al., 2002). Many of these plants are important agricultural crops or widely used landscape plants. This scale is found mostly on woody plant species, although it has been found on small herbaceous plants such as pentas, roses, ruellia, wild coffee, golden shrimp plant, and Thai basil as well. Stem dieback is associated with dense lobate lac scale populations, and also can cause plant death in highly susceptible hosts (for a list see Howard et al., 2002). Moderate to severe infestations are associated with plant decline in large trees such as *Ficus* spp. that have been infested for several years (personal observation). Heavy sooty mold production is a secondary problem and can cover the entire tree canopy.

Scale infestations are difficult to control on large plants because of the difficulty in spraying large trees. There is evidence that horticultural oil sprays can reduce population levels, especially when infestations are slight. In situations where spraying is impractical, soil drenches containing imidacloprid can reduce scale populations.

Natural enemies from India have been identified (R. Pemberton, USDA, personal communication) and USDA is currently obtaining import permits to introduce them to U.S. quarantine facilities for testing. Native natural enemies are being sought.

#### **Pink Hibiscus Mealybug, *Maconellicoccus hirsutus* Green**

The pink hibiscus mealybug is a serious pest in tropical and subtropical regions of the world. It was first reported in Florida (Miramar, Broward County) in June 2002. By July 2002, it was detected in Miami-Dade, Broward, and St. Lucie Counties, and in 2003 Indian River and Brevard Counties. As of May 2003, this distribution has remained unchanged. It's easily spread by wind, and passive transport by animals and humans. Scientists believe that this insect can adapt to cooler climates.

This mealybug infests terminal growth, often causing severe foliar and stem distortion due to salivary toxins injected during feeding activity. Pink hibiscus mealybugs grow into large masses of white, cottony colonies that can spread to most plant structures. Eggs and insect body are pink and have reddish body fluids. Unlike most other mealybug species, the pink hibiscus mealybug lacks lateral waxy filaments.

Host plant ranges over 200 species, including vegetables, tropical and subtropical fruit, ornamental, and native plants

(Hoy et al., 2003). Infestations result in plant stunting, reduced crop production, branch dieback, and defoliation. Toxins can cause plant death. Because of the serious plant injury this pest causes to economically important crops, it is under quarantine. Infested commercial nurseries and orchards are placed under immediate quarantine when detected. It is now established in natural and urban areas, and landscapes.

Because this species was anticipated to spread to the U.S., a biocontrol program was developed in 1995 (USDA, 1998). Two parasitoid wasps *Anagyrus kamali* Moursi and *Gyranusoides indica* Shafee, Alam, and Agarwal are being released into infested areas. From past experience, pesticides haven't been effective but biocontrol has been. The biological control program has successfully reduced mealybug populations in the Caribbean.

#### **Sri Lanka Weevil, *Myllocerus undatus* Marshall**

The Sri Lanka weevil was originally found in Davie, Broward County in September 2000 and in Miami-Dade County by November 2000 (M. Thomas, FDACS-DPI, personal communication). By Spring 2003, it was reported in Palm Beach County as well. This weevil's origin is Sri Lanka and little is known about its biology. Other congeneric species are known important pests.

Adults are polyphagous and have a large host plant range of over 35 species including tropical and subtropical fruit, ornamental, and native plant species (Thomas, 2002). This weevil is superficially similar to the native little leaf notcher weevil, *Artipus floridanus* Horn. Both are an ashy-white color and have a short rostrum (snout) but the Sri Lanka weevil has spined femora. However, unlike the native weevil, the Sri Lanka weevil often feeds en masse on new plant foliage. Large but temporary aggregations on flushing plants can cause obvious leaf damage rapidly (personal observation).

Immature stages are in the soil and leaf litter, and larvae are thought to be root feeders. Therefore, they can be spread by infested soil. Adults cause leaf notching to leaf margins but is not distinctively different from other beetle damage and doesn't appear to cause serious plant injury. However, the resulting cosmetic injury reduces plant value and becomes a cause of concern to the public.

Chemical control is usually not warranted. Adults can be caught when temperatures are cooler by shaking infested limbs over an inverted umbrella and dumping captured insects into a soapy solution. No natural enemies have been determined thus far.

#### **Tabebuia Thrips, *Holopothrips* cf. *inquilinus* Bournier**

The tabebuia thrips has yet to be given a specific name and appears to be closely related to a thrips described from Guadeloupe in the Lesser Antilles (Edwards, 2002). The country of origin is unknown but the insect was first found in 2001 in Miami (Miami-Dade County) and in 2002, it was reported in Broward County (FDACS/DPI, 2002). There have been single records for Palm Beach and Collier Counties. To date, its biology is poorly known.

Unlike the preceding three species already discussed, the tabebuia thrips has a narrow host range, primarily *Tabebuia* spp., with a preference for *T. heterophylla*, the pink trumpet tree. It has also been recorded on Cuban laurel (*Ficus microcarpa*), an unidentified grass (Gramineae) and foxtail palm (*Wodyetia bi-*

*furcata*) (FDACS/DPI, 2002). These thrips are foliage feeders causing galling and leaf curl, which is cosmetic and has not been associated with plant decline. This feeding damage is only to new foliage and appears to be seasonal. This pest is becoming established in urban areas causing concern to homeowners and commercial landscapers due to leaf damage.

Control is difficult due to protection by leaf galls. However, systemic insecticides are providing some control. No bio-controls have been found.

#### Resources for New Insect Pest Information

The following are some web sites and list serves for additional information on new insects pests in Florida.

University of Florida Pest Alert

<http://extlab7.entnem.ufl.edu/PestAlert/>

DPI Pest Alert

<http://www.doacs.state.fl.us/~pi/enpp/ento/>

USDA /APHIS

<http://www.aphis.usda.gov/oa/pubs/>

University of Florida Featured Creatures

<http://creatures.ifas.ufl.edu>

University of Florida EDIS

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

Pink Hibiscus Mealybug website

<http://www.mrec.ifas.ufl.edu/lso/PinkMealybug.htm>

North American Plant Protection Organization's Phytosanitary Alert System

<http://www.pestalert.org>

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