NATURAL RESOURCES DEPARTMENT
MEMORANDUM

DATE: **January 13, 2009**

TO: **City Manager Judie Zimomra**

FROM: **Natural Resources Director Robert K. Loflin Ph.D.**

RE: **Infestation of Croton Scale on Sanibel**

An introduced scale insect is causing the discoloration (blackening from sooty mold) of many trees and the defoliation of some strangler fig and gumbo limbo trees in several areas on Sanibel east of Tarpon Bay Road. Although the University of Florida has not yet identified the species, it is suspected to have been imported with exotic plants from Guatemala and has been labeled as the "croton scale" after an exotic ornamental plant that is particularly susceptible to it. Monroe, Dade, Broward, Palm Beach, and Collier Counties have all now reported outbreaks (see attached UF report). In coordination with Stephen Brown of the local IFAS extension office, Katharyn Mannion of the University of Florida, and Jenny Evans of the Sanibel-Captiva Conservation Foundation, scale samples from Sanibel have been collected for identification and a host list of over 48 species of south Florida plants, both exotic and native has been identified. Jenny Evans has photographed numerous instances of this scale insect on multiple species of native plants on Sanibel. Some of the trees that are affected the most, strangler fig and gumbo limbo in particular, are some of the most dominant and important for wildlife on Sanibel. The scale insects' waste products, euphemistically termed "honey-dew", is prodigious, high in sugar and supports the growth of the fungus called black sooty mold, which blankets both the scale-infested trees and other nearby vegetation.

Control methods for widespread infections by scale insect, especially on tall trees, are problematic at best. The City of Sanibel, in its efforts to minimize environmental impacts, has long had a policy of not using or approving the use of chemical pesticides, except where human health is involved such as with mosquito, wasp and fire ant control. The use of wide-spectrum pesticides for insect control also results in the death of non-target beneficial insects and so

is, in general, discouraged. Scale insect chemical controls include horticultural oils, insecticidal soaps and soil application of wide spectrum chemical pesticides. Both horticultural oils and insecticidal soaps are considered ineffective on large trees due to incomplete coverage on foliage. The long term best and most likely solution for control of this scale insect outbreak is via biological predators such as beetles and parasitic wasps. Some of these predatory insects are available commercially to speed up the natural process of predator control for scale insects on citrus trees and for localized infestations such as Sanibel is incurring.

After extensive discussions with horticultural experts from the University of Florida, there are both chemical and biological control methods available and recommended that might protect street trees from continued stress from this outbreak, protect the wildlife value of important native trees, and reduce the impact of this scale insect as it establishes itself on Sanibel. Though these control methods are not typical of City policy, Natural Resources staff have initiated two experimental treatments to see if either are effective in reducing the impact of this infestation:

1. **A carefully controlled experiment using the soil applied wide spectrum pesticide imidacloprid as recommended by the University of Florida was completed in early January on 47 of the native trees having the highest infestations along Periwinkle Way near Roadside Park. This experiment, which combines scientifically established side by side treatment and control areas, should enable us to see if chemical treatment for severely affected trees is practicable (cost ~$140).**
2. **In late December, the experimental release of the UF recommended ladybug beetle *Cryptolaemus montrouzieri (approximately* 12,500 adults), was completed at several locations along the Periwinkle Corridor and around City Hall in some of the most heavily affected areas. This experimental treatment will probably have to be repeated at least once to determine if this species can be established and can help achieve predatory control of this pest (cost ~$1500/12,500 adult beetles).**

Natural Resources staff conducted both applications to save contractor costs and ensure that strict application protocols were followed. Staff will be monitoring the experimental sites carefully to determine the effectiveness of the treatments.

Naples Daily News October 11, 2008

The male scales tend to settle on the undersides of the leaves(left) and look very different from the females. (Photo credit: Stephen Brown, UF/IFAS Lee Co. Extension). Adult and yellow immature stages(right) of this new scale insect on a croton twig. (*Photo credit: Lyle Buss, UF/IFAS)*

A New Exotic Soft Scale Insect on Croton in South Florida

Doug Caldwell, Commercial Landscape Horticulture

The Florida Department of Agriculture and Consumer Services, Division of Plant Industry has reported another new landscape plant pest! We have had a plethora of new pests in our landscapes over the last two years and some: red palm mite; ficus whitefly and cabbage palm lethal yellow disease are only two to three counties away.

This new-to-science scale was first found on April 9, 2008 at a nursery in Marathon (Monroe County), Florida. The host plant was croton (*Codiaeum variegatum*). Specimens submitted to the Division of Plant Industry were determined to be an unknown, but exotic soft scale insect. Subsequent collections of this exotic soft scale on croton have been made from Broward, Miami-Dade, Palm Beach, Lee counties and most recently Collier County.

Scott Krueger, DPI inspector reports more than half of the nurseries and garden centers selling crotons have this new scale. Scott advises,"Look closely, especially if you see ants on the plants. The list of host plants other than croton is increasing weekly."

The plants on this scale's menu include: Croton (*Codiaeum variegatum*), guava (*Psidium guajava*), gumbo-limbo (Bursera simaruba), lignum vitae (*Guajacum sanctum*), mysore fig (*Ficus mysorensis*), strangler fig (*Ficus aurea*), mango (*Mangifera indica*), island marlberry (*Ardisia escallonoides)*, firebush (*Hamelia patens),* wild coffee *(Psychotria nervosa)* and West Indian satinwood *(Zanthoxylum flavum).*

Adult females and late instars of this new exotic soft scale have a greenish yellow appearance with dark striations and are approximately 3.5 mm to 7.0 mm long by 2.0 mm wide. Immature males are smaller than the female scales and have a whitish-glassy

appearance and tend to settle on the underside of leaves. Unlike other soft scales insects (such as green scale) this new scale doesn't tend to have as much black sooty mold developing on the plant. This mold grows on the excretion (termed "honeydew") of most soft scales, mealybugs, aphids and some other sucking insects. But, perhaps the recent rains have been washing the "honeydew" off and hence, less mold during the rainy season.

What to do: There is little information on the biology of this new scale insect at this time, which makes these recommendations speculative. I recommend one soil-root rate drench dose of Safari (dinotefuran) or imidacloprid (Merit™ for professionals) or Bayer Advanced™ Tree & Shrub Insect Control for homeowners. Merit may take 2 weeks to move into the above ground plant parts from the roots, so if a heavy population exists, apply a 1.5 to 2% solution of paraffinic horticultural mineral oil for immediate kill of smaller stages [but there is no residual kill with the hort oil, "what you hit is what you get" and it is ineffective against the large females]. Make sure plants are in a **well ventilated** area if applying the properly labelled, hort. mineral oil (it will evaporate faster). Injury or discoloration may occur if the oil doesn't evaporate. Or, instead of the hort. mineral oil, use the foliar rate of Merit (0.5 oz/100 gallons) to get quicker results, but expect about only 2 weeks residual. Pesticide formulations containing acephate (Orthene) may also help.

Look for lady beetles as potential natural enemies. Some of these lady beetle larvae have a lot of waxy filaments and resemble mealybugs. For more details see on this new scale, see: http://www.doacs.state.fl.us/pi/enpp/ento/coccoidea_coccidae.html . For pictures of some lady beetle larvae, see: http://edis.ifas.ufl.edu/HS138 . As always, inspect plants closely before buying new plants!

Doug Caldwell, Ph.D., is the commercial landscape horticulture extension agent and landscape entomologist with the University of Florida Collier County Extension Service. The Cooperative Extension Service is an off-campus branch of the University of Florida, Institute of the Food and Agricultural Sciences and a department of the Public Services Division of Collier County government. E-mail dougbug@ufl.edu ;phone, 353-4244 x203. Extension programs are open to all persons without regard to race, color, creed, sex, handicap or national origin. For updates on Southwest Florida Horticulture visit: http://collier.ifas.ufl.edu