South American Palm Weevil Detected in San Diego County

The South American palm weevil (SAPW), *Rhynchophorus palmarum*, was recently discovered in a Canary Island date palm in San Ysidro, southern San Diego County.

Twenty additional Canary Island date palms in the San Ysidro area appear to be infested, but have not yet been confirmed.

The biology of SAPW is similar to the red palm weevil that was eradicated from Laguna Beach, Orange County, between 2010–2012. The adult of the South American palm weevil is approximately 1½” long, all black in color, with small hairs on its body (Figure 1). The larvae range from 1–5” long and pupate in a 3” fibrous cocoon (Figure 2).

The SAPW, native to Mexico and Central and South America, destroys the apical growth of the palm by feeding on the growing tissue in the palm crown, eventually killing the palm (Figure 3). This differs from the symptoms of fusarium wilt which causes dying of lower branches.

Symptoms of infested palms include yellowing foliage as well as death of new and emerging fronds.

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When Monitoring Is the Best Action
The Case of Two “Flux Diseases”

Two “sap flux” diseases observed in landscape trees – bacterial wetwood (or slime flux) and alcoholic (“foamy”) flux—often trigger demands that a landscaper “do something.” Yet the most appropriate action may be to provide cultural care and to monitor for any additional problems rather than to apply chemicals or undergo drastic “tree surgery.”

Symptoms
A single wound or bark crack located on the trunk or a large branch may be observed that is actively oozing or bleeding. The oozing liquid is usually clear and may be sour-smelling in the case of slime flux, or frothy (Figure 1) and “fermented-smelling” in the case of alcoholic flux.

The bleeding is often vigorous, and the liquid stains the bark below dark brown or black, whereas the bark above remains completely unaffected (the stain often resembles a comet with a long “tail” extending below the bleeding wound) (Figure 2).

Differential diagnosis
Flux problems can affect any tree species, but appear most commonly on mulberry, elm, and oak. The flux point occurs singly, may be isolated on an otherwise healthy trunk, branch, or stub, is often associated with pruning wounds, and is usually not too close to the ground (usually above one meter in height or so).

When multiple flux points are present (seldom more than two or three), they originate from obvious wounds or bark cracks, and each remains isolated—they do not coalesce to form a large diffuse bleeding canker as seen with some Phytophthora infections. Removing the bark around the fluxing wound reveals healthy tissue, in contrast to Phytophthora infections like Sudden Oak Death, where discolored cankers are present below the bark.

In addition, the volume of the fluxing liquid is usually substantial, wetting the bark for some distance below (in contrast to canker diseases that produce only a few droplets of liquid or none at all).

Importantly, there will be no entry holes or other evidence of insect infestation, thus differentiating the fluxes from beetle-vectored infections such as foamy bark canker of oaks or the Fusarium infection carried by the polyphagous shothole borer (these two insects also invade trees en masse, creating multiple weeping points).

Causes
The two flux problems are thought to have different causes. Slime flux is associated with bacterial wetwood, a condition in which the heartwood and parts of sapwood become soaked with liquid containing high levels of bacteria. The bacteria ferment the liquid, increasing its pressure until it oozes out through a bark crack or wound.

Alcoholic flux (or foamy flux) is thought to be caused by bacteria in the bark and cambium—shallow components of the tree, not extending into the wood—and here, too, the fermenting liquid is forced out of a wound or crack.

The differences in bacteria and the location of infection (wood vs. cambium) likely cause the two liquids to differ in smell and appearance.

Management
Despite their prominence, both types of flux are thought to be minor problems in landscape trees (in contrast to within some fruit or nut trees, where
The Ficus Leaf-Rolling Psyllid

A new psyllid pest that causes a distinctive, tight, typically complete rolling of leaves (Figure 1), has been found on *Ficus microcarpa* (Chinese banyan, Indian laurel fig) in Los Angeles, Orange, San Bernardino, Ventura, San Diego, and Riverside counties. This species of *Ficus* is one of our most common, useful, and widespread ornamental landscape trees. Incidentally, it has also long been a target for numerous exotic pests.

The psyllid, identified as *Trioza brevigena* and tentatively named the Ficus Leaf-Rolling Psyllid (FLRP), was discovered in February 2016 south of Los Angeles in Carson, California and appears to have spread rapidly among the six counties listed above. It has only been observed on *Ficus microcarpa* (sometimes incorrectly called *F. nitida* or *F. retusa*).

**Damage**

The FLRP appears to be almost exclusively attracted to the newest developing leaves, which are softer, more pliable, and easier to roll. Damage is fairly obvious and conspicuous on heavily infested trees. Leaves at the branch and twig tips are typically rolled tightly and completely into narrow cylinders (Figures 1 and 2), sometimes eventually compressed to only about 3–5 mm in diameter (Figure 3).

Rolled leaves, though brittle, remain green throughout, although other pests, such as *Josephiella microcarpae* (the leaf gall wasp) and various mealybug species, might be present and may discolor or further deform them.

The rolled leaves could be mistaken initially for damage from *Gynai- kothrips ficorum* (the Cuban laurel thrips), which creates a gall by folding the leaf blade adaxially (upper surface) along the rachis. However, careful observation will quickly show the distinct difference between the rolled leaf (caused by the FLRP) and folded leaf (caused by Cuban laurel thrips).

Also, the folded leaf gall from the Cuban laurel thrips typically has dark or purplish flecking or stippling on the abaxial (lower) leaf surface.

**Description and Identification**

Peeling back the rolled leaf blades typically reveals various developmental stages of FLRP nymphs (Figure 4). Early instars are 1–2.5 mm long, oblong, dark grayish-tan initially, changing to brownish and then brownish-green.

Advanced nymphal instars have skirts of long, white, waxy filaments at cranial and caudal parts of their bodies (Figure 5). Wing pads are typically visible in later developmental stages.

Cast skins of the final instar FLRP nymphs from which the adults have emerged are often seen attached to the leaves. Also, small, oval, mostly orange-colored nymphs embedded in leaf tissue on the outside of the roll and observable to the naked eye are likely very early instars of the FLRP, although we have not confirmed this possibility.

Adult FLRPs are typically found outside and adjacent to rolled leaves (Figure 6); apparently they exit the confines of the rolled leaf immediately upon reaching adulthood. Adults are small (about 2.6–2.8 mm long). The head and thorax are brownish-green. The abdomen is green when young and brown when old. Wings are 3 mm long, transparent, with no color pattern, and extend beyond the posterior end of the abdomen. Eyes are red and protruding (Figure 7). Females are larger than males.

The FLRP exhibits two peculiar behaviors. In one (the more common of the two observed), an individual psyllid sits on a leaf blade or perches on the margin of a rolled leaf, raises its abdomen until it is at about a 45-degree angle (Figure 8), and then moves it from side to side like a dog wagging its tail. In another, it extends one wing until it is at a right angle to the body, then waves it back and forth while walking.

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Management

Unfortunately, nothing is known about the management of the FLRP, and additional work will likely be needed. The spectrum of natural enemies of FLRP has not been studied, although we have found lacewings, lady beetles, and pirate bugs among the leaves.

One management strategy likely warranting evaluation includes vigilant scouting followed by judicious and immediate removal, bagging, and disposal of shoot tips with infested leaves. Frequent, periodic pruning, as is done for hedges and topiary, might also be an effective management technique by constantly removing infested leaves. Such regularly pruned Ficus specimens have frequently been observed with less damage from foliar pests such as the leaf gall wasp, Indian laurel thrips, and the FLRP. Timing of such pruning, though, might be critical; if possible and practical, time pruning so that resulting new growth appears at a time when FLRP activity is low, typically during the cooler months.

Because the FLRP primarily attacks new, soft, pliable new growth as it unfurls, management techniques that suppress new growth, such as withholding or lowering irrigation and fertilizers, might also be effective techniques for reducing infestations. Indeed, we have observed neglected trees with little or no irrigation and much reduced new growth that have many fewer pests, including leaf gall wasps, Indian laurel thrips, and the FLRP.

The practices listed above could be combined with insecticidal treatment for noteworthy and valuable tree specimens, although no pesticides have yet been tested specifically for FLRP. In these special cases, soil applications of imidacloprid or similar materials applied to the soil might be beneficial.

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Read the full article, originally published in the eJournal PalmArbor at ucanr.edu/sites/HodelPalmTrees/files/242336.pdf.
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