New Pests of Landscape Ficus in California

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Ficus, especially *F. microcarpa* (Chinese banyan, sometime incorrectly called *F. nitida* or *F. retusa*) and to a lesser extent *F. benjamina* (weeping fig), are important components of California's urban landscape. Indeed, *F. microcarpa* is one of the more common street and park trees in southern California and many urban streets are lined with fine, old, handsome specimens. An especially tough tree able to withstand adverse conditions and neglect and still provide expected benefits and amenities, *F. microcarpa* is a dependable landscape subject from the Coachella Valley in the low desert to coastal regions, from San Diego to as far north as the Bay Area, where it is much prized and planted for its glossy dark green foliage, vigorous growth, and adaptability to a wide range of conditions.

Fig. 1. As the name implies, the *Ficus* leaf-rolling psyllid causes new leaves to roll tightly inward completely or partially from one or both margins.

Nonetheless, *Ficus microcarpa* is a host of numerous pests, including the well known Indian laurel thrips and the leaf gall wasp, and several scale and mealybugs, which have been attacking these trees for many years. Recently, several new pests have arrived on the scene and all are mostly attacking *F. microcarpa*. Here I provide a brief summary of these recent arrivals and conclude with some potential management strategies.

Ficus Leaf-Rolling Psyllid (FLRP)

My colleague Linda Ohara first detected the FLRP (*Trioza brevigenae*) in early 2016 in Carson, California. Native to India, it is now found in at least San Diego, Riverside, San Bernardino, Orange, Los Angeles, and Ventura counties where it attacks young, newly emerging leaves, causing them to roll tightly inward completely or partially from one or both margins (Fig. 1). Several nymphal stages are found inside the rolled leaf where they seek protection and suck plant juices. The rolled leaves are esthetically unpleasing, especially when viewed from within five meters, and likely reduce photosynthesis although the long-term effects on the tree are largely undocumented.

FLRP nymphs are 1-2.5 mm long, dark grayish tan initially changing to brownish and then brownish green. Advance instars have fringing skirts of long, white, waxy filaments. Wing pads are typically visible in later developmental stages. FLRP adults, mostly found outside the rolled leaf where they often can be seen wagging their posterior end, are 2.6-2.8 mm long with a brownish head and brownish green thorax. The abdomen is green on young adults and changes to brown on older adults. Wings are 3 mm long, transparent, colorless, and extend beyond the posterior end of the abdomen.

Ficus Psyllid (FP)

Native to Asia (China, Taiwan, and the Ryukyu Islands of southern Japan), the FP (*Macrohomotoma gladiata*) was detected in Europe in 2009 and then in California in San Diego in 2015. It is now also found in at least Orange and Los Angeles Counties where it attacks young, newly emerging leaves, sucking plant juices and distorting the new growth, making it congested and compact and appearing like a leaf or flower bud (Fig. 2). FPs also produce abundant, white, waxy, woolly secretions like that of mealybugs (Fig. 2); indeed, at first glance the FP might be mistaken for a mealybug. In severe infestations, leaves and shoot tips die and the canopy thins out.

Adult female FPs deposit pale yellow eggs in tight cluster of 10 to 20 on new leaves. Five nymphal stages exist and all are covered by and protected within the white, waxy, woolly secretions. The young instars are orange-brown while the final instar is pale green with brown wing pads. During the final instar they move to the abaxial (lower) leaf surface where the adults emerge. Adults are 4.5-5.5 mm long with a brown head and thorax and transparent forewings with dark spots.

All photos by author.

Ficus Eye-Spot Midge (FESM)

Although native to Southeast Asia, the FESM (*Horidiplosis ficifolii*) was actually named and described from specimens found on material imported into the Netherlands from Taiwan in 2003. Found in Italy in 2007 and Florida in 2008, it was first detected in California in Rancho Santa Fe and La Jolla in the San Diego area in 2014. It attacks young growth, making small, irregularly shaped, sunken, dark brown galls about 4 mm in diameter (Fig. 3). Because of its color and shape, it is often mistaken for a bacterial or fungal leaf spot disease. However, each gall typically has a very small larval exit hole 1-2 mm in diameter, which looks like an eye (Fig. 3); hence, the common name. As the infestation advances, leaf necrosis spreads, and leaves die and fall, resulting in canopy thinning.

Young FESM larvae are translucent, 1 mm long, and make galls on new leaves. Mature larvae are orange, maggot-like, 2 mm long, and exit the galls to pupate. Adult FESMs are small midges with orange-brown bodies. Weak fliers, they have clear wings, those of the males 1.6 mm long and those of the females 2 mm long.

Ficus Whitefly (FW)

While several kinds of whiteflies have long been attacking *Ficus microcarpa*, none has the potential to be so destructive or such a nuisance as the FW (*Singhiella simplex*). Native to Southeast Asia, the FW was found in Florida in 2007 and was first detected in California in San Gabriel in 2012. It is now also in at least Los Angeles, Orange, and San Diego counties. While primarily a pest of *Ficus microcarpa* so far in California, it has a rather wide *Ficus* species host range in Florida, so eventually we might find it here on *F. benjamina, F. lyrata* (fiddle-leaf fig), *F. maclellandii* (Alii or Maclelland's fig), and perhaps even *F. macrophylla* (Moreton Bay fig) and *F. rubiginosa* (rusty-leaf fig). FW nymphs suck plant juices, causing leaf chlorosis, defoliation, and dieback. Growth of young trees can be stunted. Also, heavy infestations are a nuisance, resulting in clouds of adults and dripping honeydew and sooty mold. This pest does not produce the abundant white, waxy, flocculent material typically associated with whiteflies.

Adult female FWs deposit small, elongate, yellow to light brown eggs mostly along the midnerve on the abaxial leaf surface. FW nymphs are light green to tan, flat, oval, semi-transparent and are camouflaged with the surrounding leaf surface (Fig. 4). Indeed, they do not look like typical whitefly nymphs but appear more like a scale insect. After about one month the adults emerge, and these are 1.4-1.6 mm long with typical white waxy wings with grayish brown markings. Adults readily disperse when disturbed.

Weeping Fig Thrips (WFT)

Native to Southeast Asia and found in Florida in 2003, my colleague Linda Ohara first detected the WFT (*Gynaikothrips uzeli*) in California in Torrance and Carson in early 2014. It causes similar damage to *Ficus benjamina* as its better known close relative *G. ficorum* (Cuban laurel thrips) has been doing to *F. microcarpa* for many years. Adult WFTs feed on new leaves, causing distorted and deformed foliage, the leaf folding along the midnerve and forming a permanent gall with reddish, dark brown, or purplish brown dimpling or spotting (Fig. 5). In severe cases, stunted growth and defoliation occur.

Fig. 2. The *Ficus* psyllid distorts the new growth, making it congested and compact and also produces abundant, white, waxy, woolly secretions like that of mealybugs.

Fig. 3. The *Ficus* eye-spot midge attacks young growth, making small, irregularly shaped, sunken, dark brown galls, each with a very small larval exit hole, which looks like an eye.

Fig. 4. *Ficus* whitefly nymphs are light green to tan, flat, oval, semi-transparent, camouflaged with the surrounding leaf surface, and actually look more like a scale insect.

Fig. 5. Weeping fig thrips feed on new leaves, causing distorted and deformed foliage, the leaf folding along the midnerve and forming a permanent gall with reddish, dark brown, or purplish brown dimpling or spotting.

Female WFTs deposit smooth, cylindrical, whitish eggs inside the gall. The life cycle is about 30 days. Newly emerged larvae are oblong and initially translucent white with several dark colored posterior abdominal segments and red eyes but turn yellowish tan within 15 days as they mature. Very similar to it close relative the Cuban laurel thrips, the relatively large and stout adult WFT are 2.5 to 3.6 mm long and have brownish black bodies and whitish fringed wings.

Although several other *Ficus* spp. are reported as hosts, including *F. microcarpa*, the WFT is only know to complete its life cycle on F. benjamina. WFT is similar to its close relative the Cuban laurel thrips but can be distinguished by its longer pronotal posteroangular setae. Also, the WFT primarily infests *Ficus benjamina* while the Cuban laurel thrips primarily infests *F. microcarpa*.

Management

Because these pests are new, relatively little is known about their management and natural enemies; however, employing the same or similar strategies used for old pests would likely be beneficial. In some instances management might be unnecessary. For example, in the case of the weeping fig thrips, damage is usually tolerable and no action is required. Use of yellow sticky cards, vigilant scouting, and judicious and immediate removal, bagging, and disposal of infested material might help in early infestations. Encourage and protect known beneficial insects such as parasitic wasps, predatory thrips, lace wings, lady beetles, and pirate bugs. Because most of these new pests attack new growth, management techniques that suppress growth, such as reduced irrigation, fertilizer, and pruning, will likely reduce infestations. Soil/root zone applications of imidacloprid and foliar sprays of dinotefuran, the latter timed especially to protect new growth, will likely be effective. ■

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