

BIOLOGY AND MANAGEMENT OF THE CRAPEMYRTLE BARK SCALE: LANDSCAPE AND NURSERY GROWERS

Erfan Vafaie¹, Mike Merchant², Mengmeng Gu³

Crapemyrtle bark scale (*Acanthococcus lagerstromiae* [Hemiptera: Eriococcidae]) was reported for the first time in the United States (US) in 2004 near Dallas, Texas. Although initially thought to be a population of the native azalea bark scale (*Acanthococcus azalea*) feeding on crapemyrtles, it was later discovered that the scale in question was an introduced species from Southeast Asia, where crapemyrtles and the crapemyrtle bark scale are considered native.

The crapemyrtle bark scale has since spread across the US, occupying over 12 states from the east to west coasts. For the current distribution, visit <https://stopcmbs.com/crapemyrtle-bark-scale/monitoring/>. An infested crapemyrtle can be visually identified by the presence of small—less than 1/8 inch in length—white, scale-like insects on the bark and twigs, especially in bark furrows and crevices. When crushed, these scales exude a pink fluid called hemolymph. Crapemyrtle bark scale feeding results in the production of honeydew, which is the leftover sugary solution from feeding on the plant sap. High infestations can result in black sooty mold on leaves, twigs, branches, trunks, and surfaces below. As of the writing of this publication, all commercially available cultivars (*Lagerstroemia indica*, *L. fauriei*, and hybrids) of crapemyrtles appear to be susceptible to the crapemyrtle bark scale, although some cultivars may be slightly less susceptible than others.

BIOLOGY

Immature crapemyrtle bark scales hatch from eggs and are considered the most mobile stage, often referred to as “crawlers.” Once settled, immature crapemyrtle bark scales start feeding on vascular tissue through the bark. Like other felt scale species, crapemyrtle bark scale develops a white waxy coat as they mature, eventually fully encapsulating themselves in a protective waxy layer. Females only produce

one egg mass, in contrast to mealybug females that can lay multiple egg masses. Dissections of 20 female crapemyrtle bark scales found as many as 250 eggs per egg sac. Males pupate and emerge as winged adults that can disperse via flight.

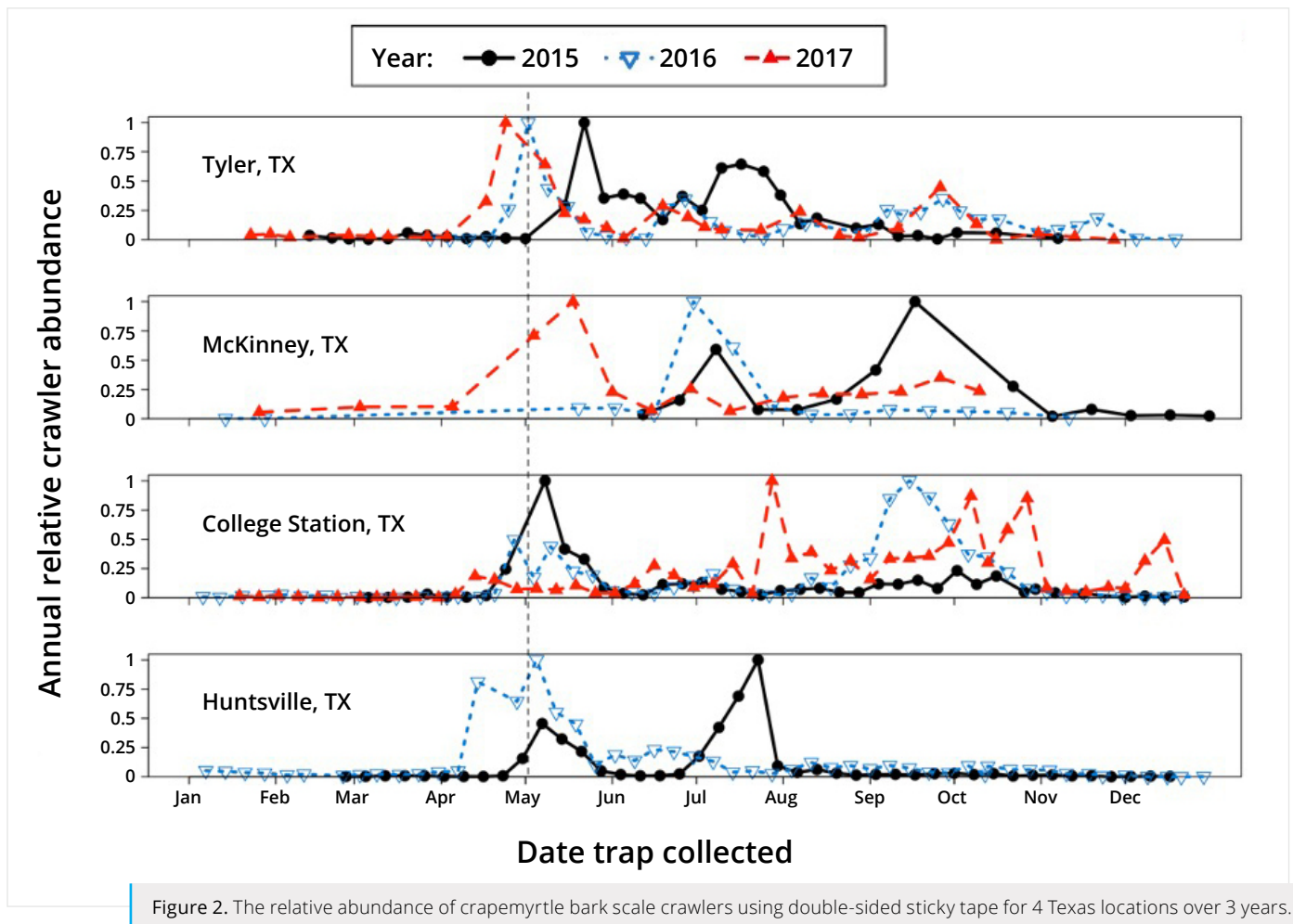
The mechanism of dispersal of immature crapemyrtle bark scales is not yet well-documented. Similar scale species can travel by wind, by hitching a ride on larger insects, squirrels, or birds, or from the movement of pruned materials or cuttings from infested stock.

Crawler emergence can be monitored on crapemyrtles by wrapping double-sided sticky tape around a branch and counting the numbers by removing the tape and inspecting with a hand lens or microscope (Fig. 1).



Figure 1. Crapemyrtle bark scale crawlers trapped on double-sided sticky tape as seen under a microscope. Red arrows point out some of the crawlers.

¹Extension Program Specialist, ²Professor and Extension Urban Entomologist, and ³Assistant Professor and Extension Specialist



Current surveys involving multiple locations in Texas, Arkansas, and Louisiana over multiple years suggest that the first time crawlers are typically active within a given year is between the beginning and end of April (Fig. 2). Current attempts to use degree-day models to predict crawler emergence have been less reliable than the Julian date (Vafaie et al., 2020). Since this is considered the most vulnerable stage for both contact and ingestion insecticides, current recommendations suggest applications around this time.

DAMAGE

In addition to the poor aesthetics resulting from the presence of high populations of crapemyrtle bark scale (Fig. 3), the scale feeds on the vascular tissue and excretes a sticky byproduct referred to as honeydew—a substance that is similarly produced by aphids, whiteflies, and some other sucking insects. Large populations can result in copious honeydew production, resulting in sticky surfaces below and colonization by a mixture of molds that can create a “sooty” appearance, referred to as sooty mold. Although sooty mold has not demonstrated lethality

to crapemyrtles, it is thought to reduce the growth and aesthetics of plants. Crapemyrtle bark scale rarely causes mortality to healthy crapemyrtles, but infested cuttings or small containerized plants may be more vulnerable.

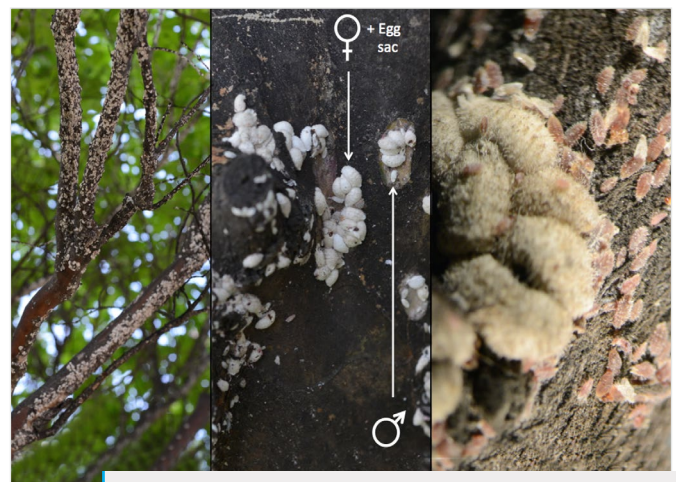


Figure 3. Photos of highly infested crapemyrtle branches (left), male pupa and female egg sacs (middle), and immatures under magnification, with size comparison to egg sacs.

MECHANICAL CONTROL

Cleaning trees that are covered in scales or sooty mold is very labor-intensive. Crapemyrtles will naturally shed their bark regularly, but if a clean tree is desired more urgently, results can be achieved with some elbow grease and soapy water. Adult scales and sooty mold can be removed, and the appearance of trees improved, with a soft-bristled brush and soapy water. However, this does not, in our experience, provide lasting control or significant suppression of scales. Regular cleaning may be required to keep scale populations low and to clean away the sooty mold.

In some cases, crapemyrtle bark scale may be more heavily concentrated on certain branches or on one trunk of a multi-trunk plant. Pruning the section or trunk with a heavy infestation will remove crapemyrtle bark scale and possibly provide some suppression in scale population growth.

BENEFICIAL INSECTS

Although the crapemyrtle bark scale is not originally from the US, a number of naturally occurring native and naturalized beneficial predators have been documented (Fig. 4). The most abundant and perhaps important predators in reducing crapemyrtle bark scale populations appear to be lady beetles. The multicolored Asian lady beetle (*Harmonia axyridis* [Coleoptera: Coccinellidae]) can often be seen foraging on crapemyrtles, although this particular predator is thought to be more important in managing the crapemyrtle aphid, *Tinocallis kahawaluokalani*. Other lady beetle species that readily feed on crapemyrtle bark scale include species in the genus *Hyperaspis* and *Chilocorus* species.

In a landscape exclusion experiment, we found that certain broad-spectrum insecticides that target beneficial insects could result in an approximate three-fold increase in crapemyrtle bark scale. This suggests that beneficial predators play an important role in suppressing crapemyrtle bark scale populations. Insecticides that resulted in the increase in crapemyrtle bark scale included cypermethrin and carbaryl. Growers should consider selecting insecticides and timing applications to reduce the impact on beneficial predators, as predators may help decrease the overall pressure of crapemyrtle bark scale.

The use or importation of beneficial predators in managing crapemyrtle bark scale in nurseries has not yet been investigated. However, due to the very low tolerance for scale or sooty mold on crapemyrtles, current natural predators are not likely to provide sufficient suppression of this scale in the time frame needed, which is right before shipping. Due to the non-lethality of crapemyrtle bark scale, beneficial insects are a feasible option for landscape management.

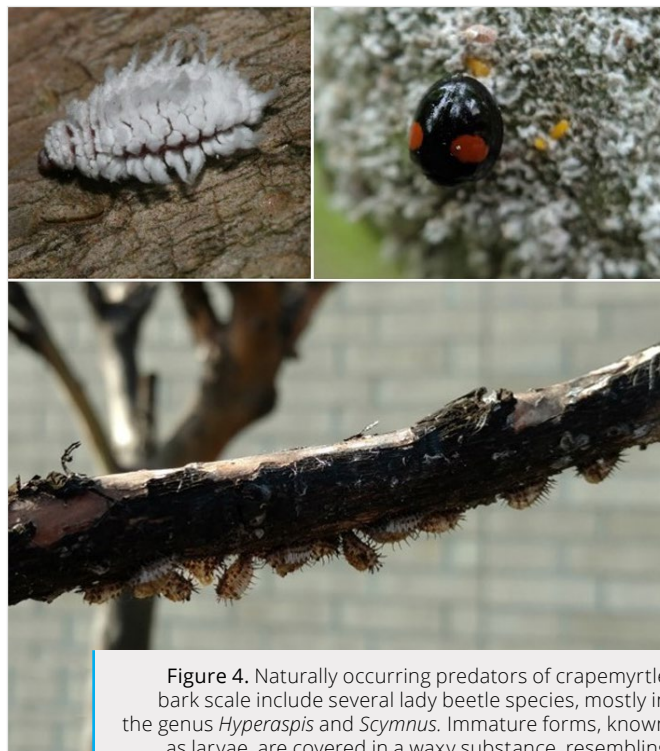


Figure 4. Naturally occurring predators of crapemyrtle bark scale include several lady beetle species, mostly in the genus *Hyperaspis* and *Scymnus*. Immature forms, known as larvae, are covered in a waxy substance, resembling crapemyrtle bark scale (top left). Adults are often black with two to six red dots (top right), depending on the species. After metamorphosing from immature larvae to mature adults, lady beetles leave behind an exuviae (bottom photo), which is the external “skin” of the lady beetle pupa.

CHEMICAL CONTROL

Several insecticides have been tested against crapemyrtle bark scale. For a fully up-to-date review of current insecticides known to work well, moderately, or poorly, visit the project team website at <https://stopcmbs.com>. For convenience, we have provided some of the most effective insecticides in this publication, but please keep in mind that this information may change as new formulations become available (Table 1). Always follow insecticide labels; the label is the law. Several insecticides that are suggested for crapemyrtle bark scale management cannot be applied while flowers are in bloom or when pollinators are visiting.

In landscapes, insecticidal control is not always warranted. Even high-scale infestations rarely cause tree mortality. Insecticidal control can be costly, especially if applied annually, and can have unintended consequences on pollinators or other visiting beneficial insects. If insecticidal control is required, consider contact insecticides for smaller trees and systemic insecticides to reduce drift for larger trees, minimizing environmental impact.

In nursery settings, crapemyrtle bark scale infestations can result in stop-sale, cause further spread of crapemyrtle bark scale, and be detrimental to the business's reputation.

Table 1. Insecticide treatments for effective control of crapemyrtle bark scale

ACTIVE INGREDIENT	MOA*	APPLICATION METHOD	TIMING	COMMENTS
Dinotefuran	4A	Basal trunk spray	Early spring; timing of first leaf bud	Basal trunk spray: spray to cover/wet bark from media to 4–5 feet above soil media. Consider use with nonionic surfactant.
		Drench	Early spring; timing of first leaf bud	Systemic; apply to soil.
Imidacloprid	4A	Drench	Early spring; timing of first leaf bud	Systemic; apply to soil. Provides up to 2 years' control.
Buprofezin	16	14 oz. / 100 gal.	Mid-April to beginning of May	Apply to the bark. Good coverage required.
Pyriproxyfen	7C	12 fl. oz. / 100 gal.	Mid-April to beginning of May	Apply to the bark. Good coverage required.
Bifenthrin	3A	21.7 fl. oz. / 100 gal.	Mid-April to beginning of May	Apply to the bark. Good coverage required.

*Codes developed by the Insecticide Resistance Action Committee. Periodically switching insecticide use among different mode of action (MoA) groups reduces the risk that insects will develop resistance to any insecticide group.

Preventative control should be considered if there has been a history of infestation at the nursery or in neighboring areas. Consider applying drenches preventatively and additional bark sprays if crapemyrtle populations are noticeable. In some cases, disposing of infested stock may be the best option.

Based on our current understanding of when crapemyrtle bark scale crawlers are the most active, systemic drench applications should be applied as soon as plants start leafing out—such as early- to mid-March—and contact residual insecticides should be applied to the bark between the middle of April and beginning of May. Multiple applications of contact insecticides, timed on a 14-day interval, have provided the most effective control of crapemyrtle bark scale when compared to a 1-time application. Drench or bark spray applications may be applied later in the season. However, the efficacy of late applications is currently not well-documented. Use a hand lens or double-sided sticky tape to detect when crawlers are present for the timing of applications later in the season.

REFERENCES

Vafaie, E., Merchant, M., Xiaoya, C., Hopkins, J. D., Robbins, J. A., Chen, Y., & Gu, M. (2020). Seasonal Population Patterns of a New Scale Pest, *Acanthococcus lagerstroemiae* Kuwana (Hemiptera: Sternorrhynca: Eriococcidae), of Crapemyrtles in Texas, Louisiana, and Arkansas. *Journal of Environmental Horticulture*, 38(1), 8-14.

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