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INTERNATIONAL SOCIETY OF ARBORICULTURE

ARBORIST NEWS

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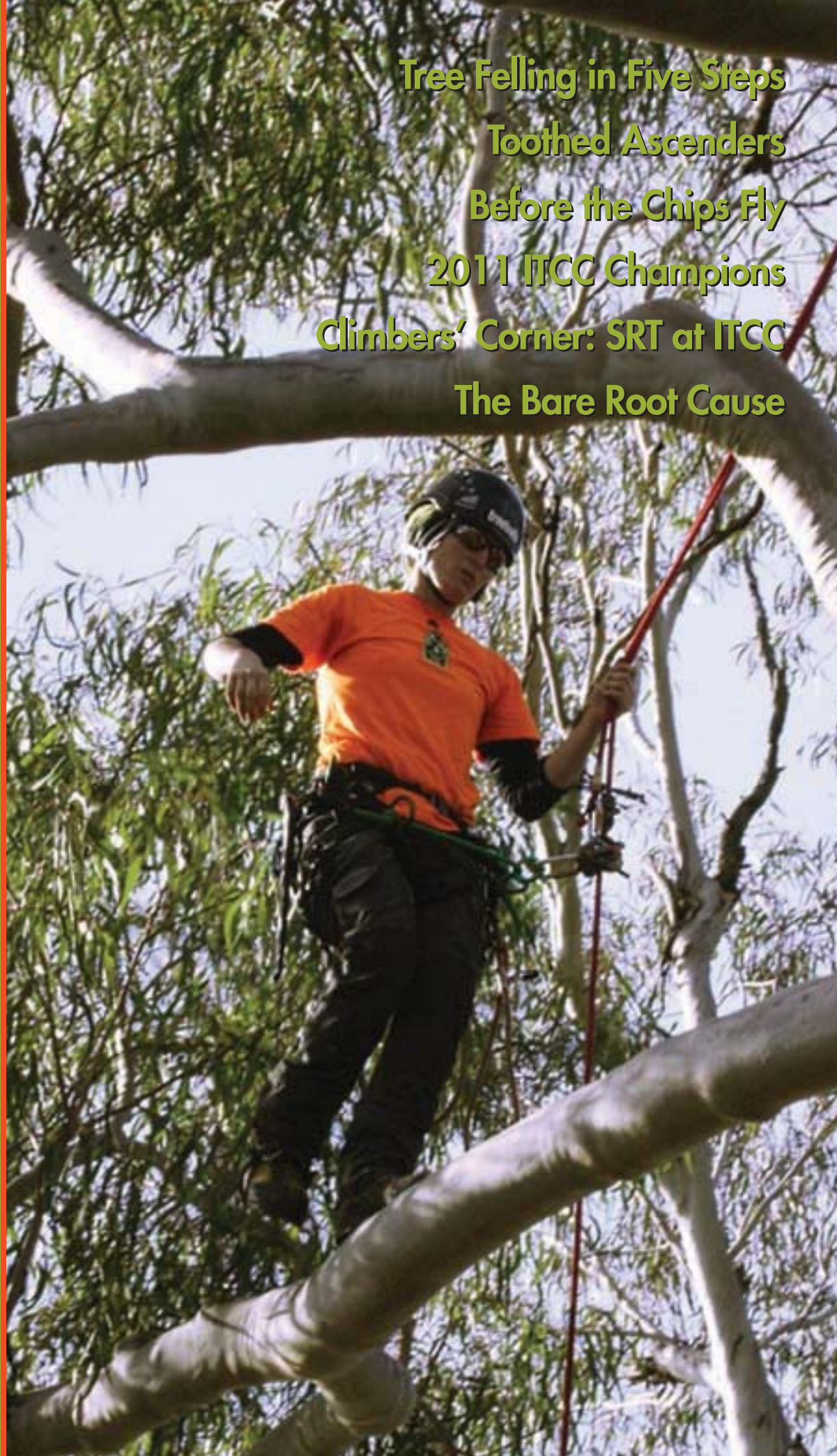

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ARBORIST·NEWS

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DETECTIVE DENDRO™

THE DIAGNOSTIC SLEUTH

By Janet Huber

The Case of the Insidious Interceptor

There's nothing like a good road trip to help a diligent detective decompress. Well… sometimes. On our way to an exotic pest conference in Washington, D.C., Codit and I were winding down a two-lane highway as we descended from the higher elevations of the Virginia Blue Ridge Mountains. The fresh, pungent scent of the forest drifted in through the open car windows on a cool, autumn breeze. It should have been a peaceful, relaxing excursion, but—"Look out!" I yelled, "Get back in your lane. That truck is coming right at us!" —Codit was driving.

Codit swerved back to the right to avoid the oncoming pickup truck. I think the driver was waving something out of the window at us as he passed, but I may have been mistaken.

"Okay, pull over right there. I'll drive," I commanded.

"O-okay," said Codit, visibly shaken. "Sorry, Dendro. I guess I just got distracted by this impressive forest of oak (*Quercus* spp.) and hickory (*Carya* spp.) trees."

I took the wheel. "These dense oak-hickory forests are common on the lower slopes of the Blue Ridge Mountains and in the Virginia Piedmont where the soil is typically rich and moist. You'll see combinations of white oak (*Quercus alba*), northern red oak (*Quercus rubra*), black oak (*Quercus velutina*), pignut hickory (*Carya glabra*), shagbark hickory (*Carya ovata*), and mockernut hickory (*Carya tomentosa*), just to name a few. Flowering dogwood (*Cornus florida*), eastern redbud (*Cercis canadensis*), and eastern hophornbeam (*Ostrya virginiana*) are plentiful in the understory. It's good for you to see how tree species vary in different parts of the country, but it's best to study the trees in this terrain *as a passenger*."

"Right! How far are we from your friend's farm?" Codit asked, eager to change the subject.

"We should be getting to Melissa Tow's farm in about thirty minutes," I said, trying to sound nonchalant. The road trip had actually been my idea so that I had an excuse to visit a friendly former flame on the way to the conference.

"So, Dendro, you never told me about Melissa. Is she an old girlfriend or something?" CODIT asked with his usual discretion – or lack thereof.

"She's a longtime friend," I responded casually, "and a CIA-trained chef." I was hoping that last bit of information would distract him, and it worked.

"Really? Whoa! I didn't know the CIA trained chefs. What is she, a cooking spy?"

"Well, if that were the case, I would be worried that her rigatoni was rigged," I mused. "Actually, CIA is also an acronym for Culinary Institute of America. She's the executive chef of a highly regarded restaurant on Capitol Hill. She recently bought a farm about an hour west of the metro D.C. area to retreat from the hustle and bustle," I explained.

"Cool. Can't wait for dinner," Codit responded.

I murmured dreamily to myself, "And oh, the things she can do with a sweet Vidalia onion."

Codit eyed me quizzically, so I clammed up and pushed down on the accelerator. Twenty-five minutes later we pulled into a long, graveled drive that led to a red brick, colonial farmhouse with a broad, columned porch. The lovely Melissa appeared immediately, an expectant smile on her heart-shaped face. Fifteen years melted away with just one look.

"Missy, my dear, you haven't changed one bit," I said, striving to maintain my smooth demeanor as she wrapped me in a bear hug.

"Aw, Dendro, you always did lay it on thick," she responded with an engaging laugh, "and I always liked that about you."

My assistant cleared his throat, and Melissa turned to greet him. "You must be Codit. Welcome!"

Melissa gave us a walking tour of her new farm. A rippling stream ran across the rear of the property about 75 yards from the house. Shagbark hickory and water oak (*Quercus nigra*) grew along the top of the stream bank. The trees were widely spaced, mature, and boasted their seasonal autumn color. As I looked upward, I noticed dieback in some of the upper branches of a couple of the trees. As I did a full visual scan of their upper canopies, I thought I could also see dense clusters on some of the branches, but my vision was obscured by the leaves on the lower branches.

Melissa's eyes followed my gaze, "I'm a little concerned about those trees, Dendro. I've noticed all summer that some of the highest branches never leafed out, and I'm wondering what else I'm seeing up there. Birds' nests? The trees still have some leaf cover, so I can't get a clear view from the ground," she said.

"Those masses could be witch's broom," Codit piped up. "That's what it's called when branch internodes shorten and a large number of terminal shoots form a thick, brush-like cluster that looks like a broom. The leaf dieback that we can see from here tells us that the trees may be under stress, and witch's broom can be another symptom of stress."

"But why would my trees be stressed?" the chef asked, obviously alarmed.

I said, "Well, Missy, to perform a proper diagnosis we'll need to take a closer look. Codit, did you bring along your climbing equipment?"

"Wouldn't leave home without it," he answered quickly, already jogging happily toward the car.

Melissa chuckled softly, "Hey Dendro, do you remember when I was studying to become a chef in New York City? You would come to visit me and we'd take walks through Central Park where you taught me to identify trees. We even climbed a few."

WHITNEY CRANSHAW, COLORADO STATE UNIVERSITY, BUGWOOD.ORG

W.M. CIESLA, FHMI

A symptom of stress, witch's broom results from a shortening of internodes and a proliferation of terminal shoots that form dense, brush-like masses of twigs.

I cocked an eyebrow rakishly. "I remember one early October evening when we climbed a red maple (*Acer rubrum*) that had an especially full canopy. We were completely hidden and inspired by the splendor of its fall fire, and we didn't come down until—"

"Here we go, Dendro. I'm fully prepared." Codit shouted, clamoring back, arms filled with a large duffel bag. He turned it over, dumped out the contents on the ground, and prepared for his climb. "Which tree?"

I put my memories on hold and pointed upward, "Try the shagbark hickory with the obvious dieback, but what comes first?"

"A root collar inspection, of course," Codit replied.

The roots and lower trunk appeared to be healthy and structurally sound, but I cautioned Codit that rot could be present in higher branches and that he should continue to make assessments as he climbed. Melissa and I moved back to a safe distance so that we were not directly beneath him as he was ascending.

Dieback was a symptom of a wide range of biotic and abiotic disorders, so more specific information was needed. Witch's broom could result from infestation by a number of organisms, such as fungi, insects, nematodes, mites, or viruses. I hoped Codit would find something more conclusive.

Melissa, scented by the herbs from her garden, stood close to me. I inhaled rosemary, sage, lemongrass – and immediately wondered what was for dinner.

"Have there been any unusual environmental situations in this area in the last few years?" I asked instead.

"Well, let me see… The only thing that comes to mind is that the realtor told me they had several years of severe drought here a few years back. The owner of the property next to mine told me that this stream was reduced to a mere trickle during that drought."

"Interesting," I replied. "These tree species prefer loamy, moist soil, and it's common to see them growing near a fresh water source. A prolonged drought could significantly impact their health."

After about 15 minutes, Codit indicated that he was ready to descend. After he reached the ground and disengaged himself from the ropes, Codit pulled a plastic zipper bag out of his shirt pocket.

With surprise, I inspected the waxy green contents of the plastic bag. This culprit had not occurred to me before, but now all of the evidence added up.

Turn to page 46 for the solution.

WHAT'S THE SOLUTION?

I handed the plastic bag to Melissa. "Can I touch it?" she asked.

"Yes, but you're smart to ask first."

She pulled out the brittle, waxy green shoots that were inside. Attached was a cluster of small, green berries. She wrinkled her nose. "It doesn't smell too great. What exactly *is* this?" Melissa asked. "It looks nothing like hickory leaves, but it does look kind of familiar."

"This is something that you would associate with a different season when you see it for sale as decoration. By then, the berries will have ripened to a whitish color," I hinted.

"A seasonal, ornamental..."

"Ornamental only if you find parasites attractive," I interrupted dryly.

Melissa shot me a slightly annoyed look—a look I remembered well—and her brow creased in thought. She looked at the greenery again. "This is mistletoe, isn't it? But why would you call it a parasite? And why did Codit find it up there in my shagbark hickory?"

"Codit," I said, "do you want to tell her about our not-so-friendly American mistletoe (*Phoradendron serotinum*), one of two leafy mistletoes found mainly in the southeastern portion of the United States?"

"Sure. The reason Dendro calls it 'not-so-friendly' is because mistletoe can be very damaging to trees," Codit explained.

"Mistletoe is actually classified as a hemiparasite, which is a parasite that can produce its own food, yet it takes all its water and essential elements from the tree. It needs to establish on a twig that is large enough to survive while providing resources. Twigs that are moderately vigorous and are about 0.5 to 0.75 inches (1.3 to 1.9 cm) in diameter are the best candidates for infection—not so small that they are sealed off and die before the mistletoe can establish, yet not so large that their thicker, corkier bark makes penetration by germinating mistletoe seeds more difficult."

JOSEPH O'BRIEN, USDA FOREST SERVICE, BUGWOOD.ORG

Mistletoe is a hemiparasite that robs a tree of water and other resources, creating conditions of stress as it infests the tree.

"But how does mistletoe even get up there in the treetops?" Missy asked.

"Birds distribute mistletoe seeds as they move around in the tree crowns," Codit replied. "When a seed germinates on a twig, it develops an attachment to the twig and slowly forms a root-like base, called a haustorium. This haustorium cozies up to live tissue and steals resources as the twig grows around it. It takes about three to five years for mistletoe to bear fruit, so this mistletoe is already well-established."

"Very good, Codit," I said, praising my assistant. "Mistletoe is sneaky and subtle about creating an attachment."

PAUL A. MISTRETTA, USDA FOREST SERVICE, BUGWOOD.ORG

Once mistletoe seed has germinated on a branch, it develops a root-like base called a haustorium that sends out shoots, eventually producing fruit.

I added that even though the mistletoe does photosynthesize, it doesn't share those sugars with its host. Trees that are already stressed due to climactic conditions, such as drought, become more susceptible to infection. And subsequently, the mistletoe creates a higher level of damage in a water-stressed tree, because it is robbing the tree of already-limited resources.

From the ground, we mistook the large masses of mistletoe for witch's broom; however, witch's broom, dieback, and reduced growth can all be early symptoms of infection. Over time, the mistletoe may take a much greater toll as it grows and multiplies. The area of a twig or branch that is infested becomes less structurally sound and can crack, providing an entry point for fungi, bacteria, and insects. Branches may die and fall, and massive infestations can eventually result in tree decline and failure.

"How do we keep that from happening?" asked Melissa.

I replied, "One of the most effective ways to remove mistletoe is to prune infected branches at a node some distance behind the mistletoe shoot. Pruning should be done according to best tree care practices and the tree's overall health. You can't just remove the mistletoe shoots that grow above the surface of the branches because the haustorium will remain and continue to rob the tree of its resources, sending out new shoots."

"Sounds like a big job," she said.

"You'll want to get some estimates from ISA Certified Arborists who are experienced in removing mistletoe. Later, I'll show you where to search for arborists in your area on the TreesAreGood website (www.TreesAreGood.org). And if now I've completely intrigued you, I can also point you in the direction of

several research articles about removal of this perilous parasite that can also be accessed online, through the ISA website (www.isa-arbor.com/education/publications/auf.aspx).

"Wow!" Melissa exclaimed. "All this information is great, Dendro, but you just took all the romance out of a holiday kiss under a sprig of mistletoe."

"Sorry to burst your bubble. But you know, it's the tradition that counts," I said with a raised eyebrow as I began to lift the plastic-bagged mistletoe above her head.

Melissa waived me away, pretending to be annoyed, but then met my eyes with a Mona Lisa smile tugging at the corners of her mouth. I gave her my smokiest gaze and hoped that it still worked. I was looking forward to the culinary delights of Chef Missy Tow, but I was especially hoping to follow dessert with a little more reminiscing of our Central Park tree-climbing days.

Janet Huber is ISA's Editorial & Production Manager.

READERS' FORUM

Re: "How Many is Enough?"

In response to the Bruce Kreitler letter, "How Many Certified Arborists are Enough?" (April 2011, page 48), I am compelled to reply in a perspective as to how I see it.

When you open an atlas and view all the states, cities, towns, and communities, there are a lot. What if each state had, let's say, only 1,000 certified arborists? I agree that a lot of southern states are heavily certified, such as Florida or Texas, and also California. Now, getting to the 25,000 number. There are a huge number of certified arborists who have not taken down a tree, have not climbed a tree, or have not raked clean a customer's yard of brush. Why? Because these arborists work for either a county or state position that required such a credential.

Oh, now that brings the number down by possibly several thousand.

Bruce did mention that there are bad apples in the bunch, and I agree with that statement, because where I live there is a certified arborist whom you never see in the field. He sends his crew out to do the work, and some of the work they do is not up to standards by any means.

You will never stop fly-by-night tree trimmers. They come and go just like the seasons do. I know this for a fact because I have seen over a dozen disappear in the past four years. The damage they've done, however, has been left behind.

Is 25,000 too many? Depends where the populace of that number is located, as I see it! A tree hacker once told me, "Hey, there is enough work around for all of us." He may be right, because not everyone uses a trained arborist for tree care—and it shows.

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