



DETECTIVE DENDRO THE DIAGNOSTIC SLEUTH

By James Komen and Nick Miele

The Case of the Baffling Butternut

Codit and I found ourselves on assignment in Oshawa, Ontario, Canada. We were meeting with a good friend of mine, Amanda Brighton, a local consulting arborist. She had asked me to assist her with a construction impact report she was preparing.

We arrived about ten minutes early, but by the look of things, she was already hard at work, scrutinizing the construction plans on the hood of her car.

As soon as she saw us drive up, Amanda gave us a knowing stare and procured three mugs and a thermos from her car.

“Good morning, Detective! Thank you for coming out. May I interest you gentlemen in some coffee?”

Codit and I rolled out of the truck and gladly accepted. Free coffee on the job? From a friend? Please and thank you.

Amanda then took out a small jar of a dark, viscous liquid and added a splash of it to her own mug. Codit

looked at me out of the corner of his eye, wondering what the jar might have contained. Sensing his reaction, Amanda chuckled, and her sandpapery voice was full of confidence. “Maple syrup for your coffee? Tapped from my own trees and boiled last season.”

Clearly having never tried the combination before, Codit cautiously accepted. He was rewarded with a quick burst of sweetness. “Mmmm. Thanks!”

Coffee in hand, we were ready to get to work. Amanda introduced us to the case. “Detective, I’ve been working with property owner, Armen Bassil, on a new retail development project here in town. Mr. Bassil is an investor with grand plans for development of a vacant lot. However, he ran into a roadblock when he found out about the potentially protected status of a tree growing in the center of the lot!”

“Potentially protected?” Codit asked. He slurped his drink, sucked on his front teeth, and sniffed amicably. “What’s a *potentially* protected tree?”

“The Canadian Species at Risk Act (SARA) protects species on the List of Wildlife Species at Risk,” Amanda explained. “Butternut (*Juglans cinerea*) was added to the list in 2003, making it a protected species. But SARA only protects pure species on the list. So, a sample of a suspected butternut tree can be tested for whether it’s a pure species or a hybrid. Hybrids are *not* protected.”

Codit and I mulled this over while we examined the site. A single butternut tree, perhaps 90 feet (27.4 m) tall, stood alone in the center of the lot. Although it was still dormant and had some defects in its trunks, it was beautiful to behold—and much bigger than any butternut I had ever seen. There was no other tree like it nearby. I couldn’t help but wonder how impressive it must look when its canopy was filled with leaves—pinnate compound leaves with 11 to 17 alternate, stalkless, hairy leaflets. We proceeded to examine the buds, stems, and bark.

Armen arrived a few minutes later. “Hey, there! You must be Detective Dendro! Amanda told me you will be working with us on this project.”



The butternut tree was dormant when Detective Dendro and Codit inspected it. Although it was not without its defects, it was still in good condition. Is this tree protected by law?

"I'm happy to help, Armen," I said, guessing correctly, as the man clapped his hands together and gave me a stern once-over. I gripped my coffee mug tighter. "Looks like you've got a butternut here."

"I sure hope not! These trees aren't just protected by municipal bylaw or by provincial law; they're protected *nationally*. And pure butternut species cannot be removed for a commercial development without a specialized permit."

Codit returned to my side. "Well, what if you—"

"A permit that I would be unlikely to obtain."

"Right," my assistant said with practiced poise. "But it's only one tree and--"

"There's not enough room to develop this land into a financially feasible retail center if I have to preserve this tree," the man added. "If this tree is protected, then my development project is sunk."

"From what I understand," came a stern voice, "there are a few exemptions that allow these trees to be removed." Amanda joined the discussion, levying in one hand the construction plans, now rolled into a tube. She pointed as she spoke. "One exemption allows the tree to be removed if it was deliberately planted by someone. But we have no records of this tree being planted. Another exemption allows removal of a heavily diseased tree. Butternut canker (caused by the fungal pathogen *Sirococcus clavigignenti-juglandacearum*) is lethal to these trees. And while this big, old tree has been on this parcel for generations, there are no significant signs of the tree being heavily diseased. The butternut is old, sure, but there's no evidence of the dying branches and stems that would be consistent with or indicate canker was a problem."

I nodded. Codit nodded. Armen, wrinkling his nose, nodded as well.

Amanda jabbed me in the shoulder with the construction plans. "A third exemption allows removals of hybridized trees. And that's the route Armen is hoping to take. If we have a lab test that shows it's a hybrid, then it won't be protected, and he can remove it. So now I would like to ask you, Detective, can you please take a tissue sample to the lab and identify whether this tree is a pure species or a hybrid?"

Codit was back at the tree. He took a cutting and placed it in a plastic bag.

"We'll get the information you need," I said to Amanda and Armen. "We'll also do a little background research on the tree, too."

Armen and Amanda agreed. However tense our conversation had been, it was important that we all remained professionals.

Codit piped up. "Before we collect any more data. May I ask you for something very important?"

"Yes, Codit?" Amanda asked.

Innocently, he held up his coffee cup. "...more maple syrup? Please?"

After collecting our field data on the tree, Codit and I returned to the office. While unpacking my laptop and



Satellite image of a prospective development site in 2013. If there is greenery on or bordering the property, it is incumbent upon the developer to be aware of the laws governing said plant life.

field notes, I gave Codit his instructions: "I want you to find out everything you can about the history of this tree."

"Okay, but, what exactly are we looking for, Detective?" My assistant was in the process of pouring some store-bought maple syrup into his coffee.

I paused. "I don't know, but get me images of this tree as far back as you can. Let's start there."

Codit took a sip and waited for the flood of sweetness to rush over him, except it never came. He frowned. His taste test clearly didn't measure up to the high standard of the amber grade syrup Amanda had shared with us earlier. He set his coffee aside.

Resolutely, we waded through historical site photos, looking for the butternut tree on the property.

First, I pulled up the Google Street View™ mapping service. I could see the tree in 2015, 2014, and 2011, but no further. This tree had been there for almost a century, so this was only a small piece of its lifespan on site.



Satellite image of the site in 2002, showing property lines before the large commercial complex had been demolished.



Aerial photo of the site from 1948. Dendro and Codit turn back the clock even further. Can they find what they need to close the case? Or do they need to keep on digging?

Next was the Google Earth™ satellite view and mapping service. There were aerial images of the area in progressively decreasing photo resolution dating back to 2005. Using the surrounding streets and neighboring homes as a guide for property lines, I could pick out the butternut tree in each of the images, even though it was sometimes just a dark blob of pixels.

I didn't see anything particularly helpful.

Codit quickly pitched in and purchased some satellite data of the area dating back to the 1990s and emailed it to me.

"Codit." I gave him a serious look over the top of my laptop. "We need to go back further."

"How? This is the earliest satellite data available for this property. What do you expect to find?"

Rather than answering directly, I gave him the address of the provincial hall of records. "I need you to access the archives this week. Please look for the earliest aerial photography of the property you can find."

Codit wrote down a few notes and left to do some serious research querying. While diving into stacks of archived public records isn't exactly the most exciting pastime, it was a good chance for him to take a break from field work.

A full week of waiting for the DNA test results would go quickly. It's like detective Columbo used to say, I thought, in reference the old TV show: "When you're looking for something, you may not find anything. But when you're looking for *anything*, you're bound to find *something*."

One week and several syrup-in-coffee mornings later, Codit showed up at the office with a blank look on his face, carrying a stack of papers. He must have been wiped out from the day's research.

I flipped through the files. The top page of the top-most packet was the result of the DNA test. "Hmmm. Just as I suspected: it's a pure species. That makes it a protected tree. Armen won't be happy."

Codit could tell I hadn't seen everything in the packet. He gestured at the other papers. "Keep going, Detective."

I flipped through the next few pages and saw what he was referring to. He had found some aerial photography of the site dating all the way back to 1928. Apparently someone had taken a camera up into a hot-air balloon. It was extraordinary to see these historical images so far back in time. In the packet were several photocopies of the original images, and upon said photocopies, he had identified the subject butternut tree on each.

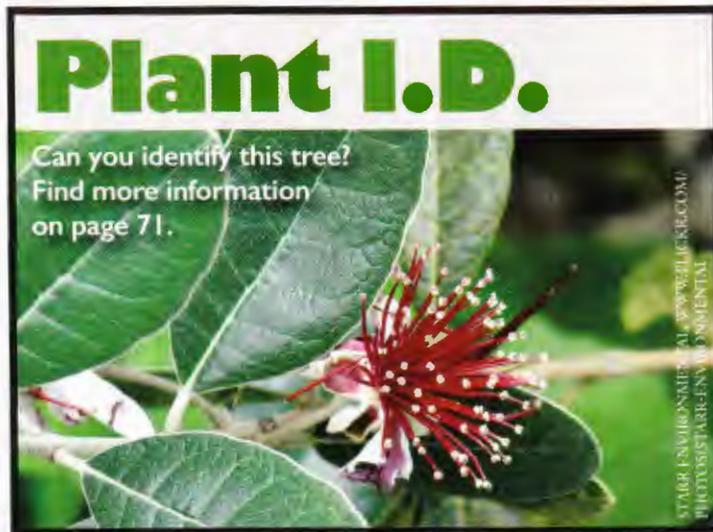
It took me a minute to realize what these images meant. But then it dawned on me—something I wouldn't have been able to tell from our site inspection.

I took a moment to commend my assistant. "Good work, Codit. This is very good research. I'm glad you were able to pull this image from the archives!"

Codit flopped into his chair and stared off into space. "Detective, you do realize that if we tell Armen, we would be leading to the removal of a very nice tree. How does that make you feel? Wouldn't you rather let him believe it's a protected tree?"

"I was hired to do a job," I replied without hesitation. "And I intend to follow through on the assignment. It would be unethical for me to withhold any information on this case from my client. Our role as consultants is not to make value decisions for our clients; our role is to provide information and allow our clients to choose for themselves."

*What did Codit and Dendro find?
Turn to page 64 to find out!*

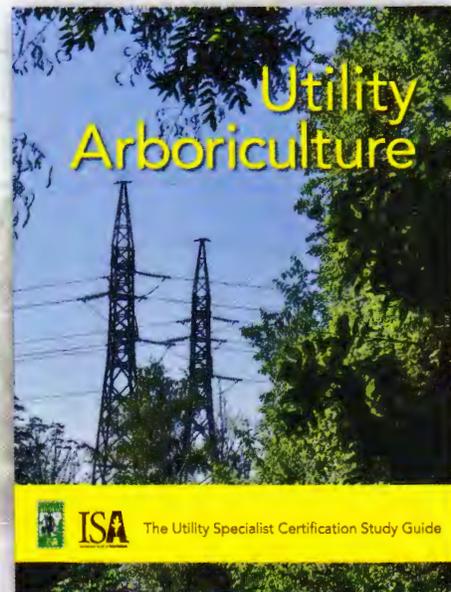


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WHAT'S THE SOLUTION?

Continued from page 25



In the image Codit had pulled from the archives, he identified the survey lines where the future road would be constructed. From that, he was able to identify the location of the subject tree.

"There's our tree, Dendro." His voice was solemn.

But it wasn't alone . . . like we saw in the field and in all the other satellite images. It was growing in a perfectly linear row of ten other trees of an identical size. This tree was originally part of an allée—a *deliberate planting*. The owner of the land in the early 1900s had planted a row of butternut trees along an old farm access road. The other trees in the row must have been removed when the farm parcel was subdivided in the early 1940s and the farm road was wiped away. This would have occurred long before the species became protected.

I recapitulated our finding to Codit. "The tree was deliberately planted. So, even though it's a pure butternut species, it falls under the deliberate planting exemption."

"Which means it's not a protected tree," Codit grudgingly concluded.

"That's right. And Armen will be pleased with this good news. I'll document my findings in a short report, and I'll make sure to save multiple copies of this aerial photograph to provide as evidence of our conclusion."

Sure enough, Armen was beside himself with gratitude when he received my report. He shook my hand, gave me a slap on the back, and grinned wider than I knew was humanly possible.

"I can't thank you enough, Detective! Now I can proceed with our construction project. And by the way, although this tree will need to be removed to facilitate construction, I do intend to plant replacement trees throughout the developed property."

Armen handed me a small package. A gift? I pulled out a thank-you note and then a bottle of—

Codit snatched it out of my hands the instant he saw it. "Homemade maple syrup!"

Of course.

I had a feeling Codit would be funneling syrup into his coffee the moment we arrived back home.

In the truck, on our way back to the office to pack things up, Codit held the syrup bottle in his lap. It was apparent he was conflicted: happy about his new prize but bummed about the tree.

I offered a consolation. "You know, I think things turned out as well as they could have. We did a good job of handling a rather . . . sticky situation." A•N

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