VOLUME 20
NUMBER 6
DECEMBER 2011

INTERNATIONAL SOCIETY OF ARBORICULTURE

ARBORIST NEWS

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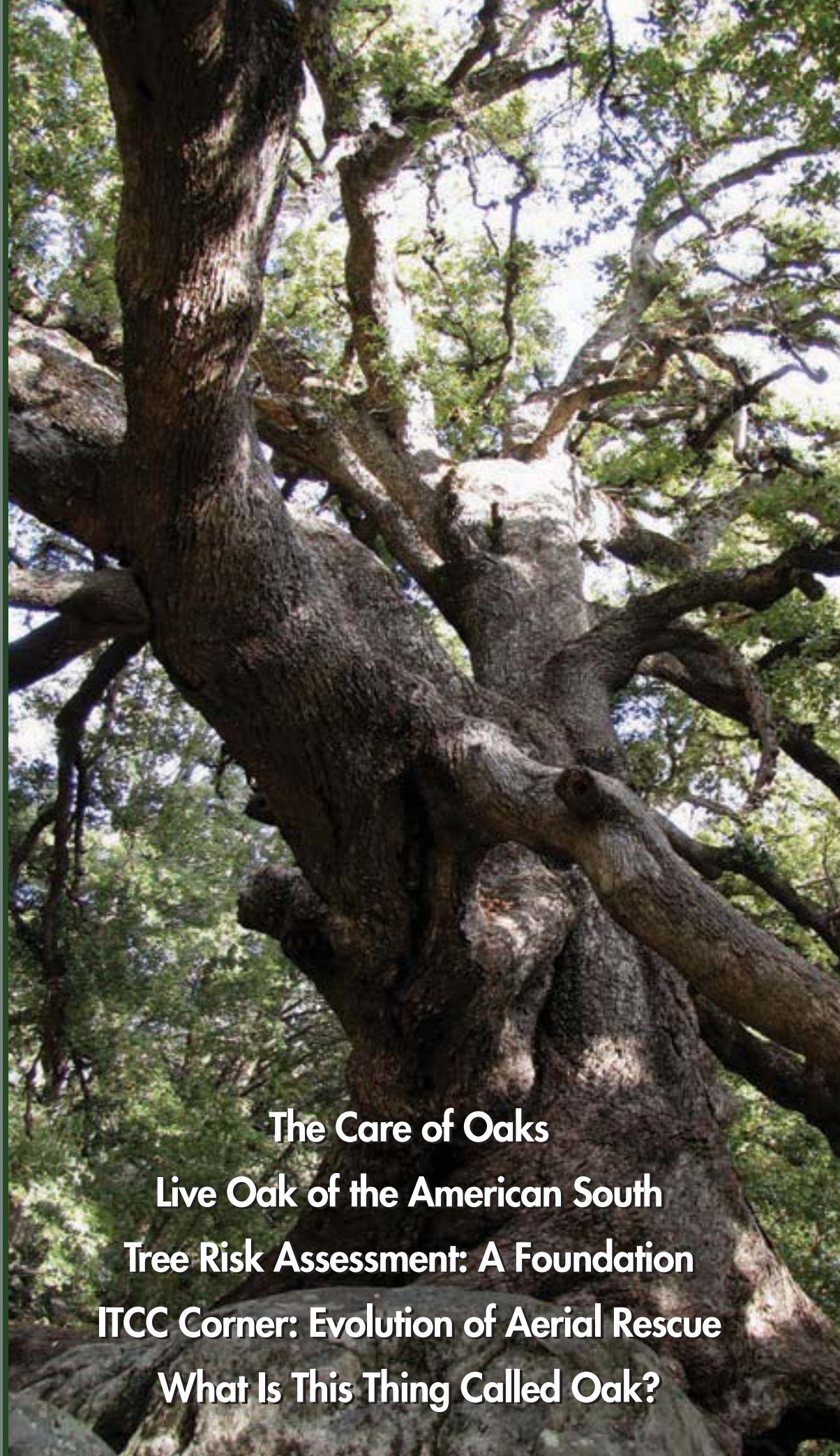


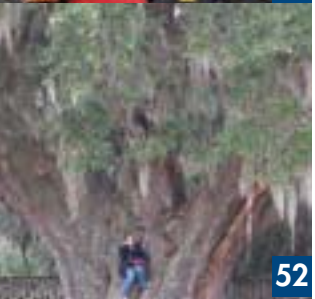
The Care of Oaks

Live Oak of the American South

Tree Risk Assessment: A Foundation

ITCC Corner: Evolution of Aerial Rescue

What Is This Thing Called Oak?



INTERNATIONAL SOCIETY OF ARBORICULTURE

ARBORIST·NEWS

VOLUME 20 NUMBER 6 DECEMBER 2011

ISA Perspectives 5

The year 2011 has come to an end and it's time to reflect. ISA's Jim Skiera takes a look at the many ways ISA was challenged to manage significant changes within the organization.

Tree Risk Assessment: A Foundation 12

The December 2011 CEU article is double-sized, and brings into focus the basics of risk assessment and mitigation for arborists and urban foresters. This is the first of a long-running series.

The Care of Oaks 24

Helping fill out our theme on all things *Quercus*, L.R. Costello steps in for an informative feature on improving the soil conditions of oak trees The feature is adapted from a book he co-authored, *Oaks in the Urban Landscape: Selection, Care, and Preservation*.

ITCC Corner: Evolution of Aerial Rescue 48

The International Tree Climbing Championship is looking at expanding its Aerial Rescue Event. Find out how future installments will challenge competitors.

TREE Fund Update 51

Incoming president of the TREE Fund, Jim Zwack, reflects on his own experiences as a student in search of research grants. Education is expensive, and passionate students sometimes need a bit of help. "It's up to us to ensure that their passion finds fertile ground in which to grow," he reaffirms.

Live Oak of the American South 52

Read up on the heritage and growth characteristics of the live oak (*Quercus virginiana*) as it appears throughout the American South.

Cover Image:
Quercus chrysolepis

Cover Credit:
Guy Sternberg

Your contributions to and comments about *Arborist News* are welcome. Please submit all materials to *Arborist News*, P.O. Box 3129, Champaign, IL 61826-3129. The deadline for the February issue is December 20, 2011.

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DETECTIVE DENDRO™

THE DIAGNOSTIC SLEUTH

By Guy Meilleur

The Case of the Disheveled *Michauxii*

It was a day like any other. Codit was aloft in a *Quercus shumardii*, reducing its branches away from the rare *Quercus frainetto* that it was crowding. "Right there, you got it," I called, as he pointed his hand saw at a point just beyond a stout lateral. "That cut looks smaller than two inches, and it's in line with the new crown outline. Twenty percent off provides at least five feet clearance for the *frainetto.* That fits our specs, so just follow that general outline as you descend."

Confident that Codit's work would meet the owner's objective of adequate clearance for at least three years, I left the work zone and took off my helmet. Starhill Forest Arboretum had many species of oak that were new to me, so I took my time as I examined them one by one. Minutes melted away—so fast that I was startled to hear Codit's voice downhill from me. "Hey! Dendro, come look at this one," he called. "This swamp chestnut oak is looking pretty rough."

I found my way through the young grove growing in this quercetum to its southern edge. There, still in his saddle, my apprentice was gazing at the crown of a *Quercus michauxii* that indeed appeared quite disheveled. "I was coming back uphill after dragging brush down to that habitat area," he said, flinging sweat from his brow as proof of his exertions. "This discolored yellow and brown foliage stuck out of the red autumn color like a sore thumb. The branch ends are worst, going from chlorotic to necrotic, discolored to dead." An oak wilt pocket was treated last year, not far away—maybe this tree got infected through root grafts. The twigs appear to have a rough texture," he noted, picking one off the ground. "I'm not sure how typical that is. The tree's on the sunny side of the grove, and this summer's drought was one of the worst ever. I know they haven't put irrigation into this area yet. What do you think, Dendro?"

GUY STERNBERG

Even in autumn color, this *Q. michauxii* is looking disheveled.

GUY STERNBERG

Bumps spiraling on this *Q. michauxii* have Codit confused.

The stem of this *Q. insignis* is smaller than a twig, and its spiraling bumps are different — but how?

GUY MEILLEUR

I focused my binoculars and replied, "The answer lies in a nickname used by a popular puppet pig, and in the symbol of my astrological sign. Let's head back to the nursery building; my water bottle's empty. Bring the twig along, if you would."

Codit absentmindedly twirled the twig between his fingers as we walked. "This twig has a spiral sort of form. Strange…" He frowned, sarcastically adding, "I just love your arboricultural clues… about pigs. Let's see… There was a pig movie called *Babe*, and Wilbur in *Charlotte's Web*, but did they use nicknames? And you were born in October, but what does astrology have to do with the tree? I don't believe in that stuff. It's not scientific."

"Science can be found in some unlikely places." I smiled as I refilled my bottle from the hose and pointed to a one-gallon pot. "So can spiral arrangements—observe the bumps on this seedling. What do you think is the cause? The nuts of *Quercus insignis* can reach two and one-half inches (6.3 cm) in diameter. It's the largest—" Just then Codit's phone hummed in his pocket.

"Hold that thought, Dendro," he said, flipping his phone open. "My friend out in Portland, Oregon, just e-mailed me this photo. Look at the smooth round bumps on this *Quercus garryana*, the Oregon white oak. Those are some big ones, aren't they?"

I leaned over to look, and laughed. "Big, yes, but *what*, now that is the question. Quite a coincidence—we now have three very different oaks, all with spiraling bumps. Let's break for lunch and think it over."

Can our team smooth out these bumpy issues? Turn to page 61.

WHAT'S THE SOLUTION?

"I still don't know what it has to do with pigs or astrology," Codit said, "but I think the bumps on those *michauxii* twigs are some kind of sucking insect."

"Right you are." I thumped him on the back as I swallowed my last slice of onion. "As you may remember from *The Muppet Show,* Miss Piggy's nickname for her amphibious boyfriend was 'Kermie.' As for our astrological connection, October-born Librans strive for balance, so the sign for Libra is the scales. Those small, sucking pests are known as Kermes scales. Their damage has exceeded our client's tolerance threshold, so we'll specify a dormant oil spray to suffocate the scale insects.

"Kermie… scale," Codit groaned, rubbing his forehead. "Anyway, December's a good time here in the Northern Hemisphere for that control. But what does that have to do with the bumps on that seedling?" Codit wondered.

"Very little," I replied, stroking the stem with my thumb. "In your botany class you learned that a node is a growth point on a stem. Three or more leaves or buds at a node are called a whorl, and two at a node will be opposite each other. When there is one growth per node, they alternate in a spiral, as you saw when you twirled that twig. This means that their points of attachment, if connected by a line, form a spiral around the stem, each leaf arising a short distance to one side of the leaf below. Where leaves are either opposite or whorled, they stand in definite cycles."

"That maximizes collection of sunlight, right?" Codit rhymed. "And that bud at the tip of the stem is the terminal bud."

I continued: "In most woody plants of colder regions, resting buds are formed and growth is periodic. There's a short period of bud opening in the early spring, but then there is often a "second flush" of growth during a warm summer. New buds appear later in the growing season, remain dormant over the winter, and expand during the following spring. In nearly all such winter buds, the base develops protective scales—not to be confused with Kermes scales!

"The arrangement of leaves on a shoot is called *phyllotaxy* in Greek, and in "textbooks."

I smiled. "The stem does not put out leaves as it elongates, but only separates expanding leaves that formed at nodes inside the bud. A node produces not only leaves but also buds that develop into branches. Because of their position on the stem, these buds are called lateral or axillary buds. Branches of the stem also arise as buds, one of which is ordinarily formed in the axil, the upper angle between the leaf and stem. They usually appear before the leaves reach their full size, but lay low until the time is right. Because lateral buds are formed in the leaf axils, their arrangement always follows the leaf arrangements, being either alternate, opposite, or whorled. The leaves may fall off as the branch develops, generally leaving a visible leaf scar, like this one here."

Codit squinted as he adjusted his hand lens. "I see it!" he exclaimed, pulling out his measuring tape. "I can also see the scars formed by the terminal buds—this one grew four inches (10 cm) two seasons ago."

"Each species, and sometimes a genus or a family, has a specific pattern. An alternate bud arrangement is expressed as a fraction, such as 1/2, 2/3, 2/5, or 3/8. The top number is the number of turns it takes to reach a bud directly above or below. The bottom number is the number of buds passed. This arrangement helps to identify plants, particularly in winter."

"This sure will help me learn to tell trees apart, and also how to prune them," Codit noted.

"Definitely," I agreed. "Also, when a terminal bud is removed by pruning or breakage, the buds below will start to grow. That is how reduction pruning creates a denser form. Most shoots that grow from old branches, from the trunk, or near a large pruning cut, are from preexisting latent buds, not newly formed adventitious buds. The next cycle of pruning will involve some thinning of this growth, to train these oaks into a stable structure. Coniferous species, such as the giant firs and sequoias out in Oregon, continue shoot growth as they respond to environmental conditions."

GUY STERNBERG

Buds expand into spiraling purple foliage on this *Quercus texana* (syn. *Q. nuttallii*) 'New Madrid', displaying helical phyllotaxy, and the breathtaking diversity of the genus *Quercus*.

"Well, I've got the solution to the Oregon oak's bumps," Codit said proudly. "It's caused by less damaging insects. Cynipid wasps lay their eggs in twigs, or in the mid-rib of a newly-growing leaf, and the tree responds by building tissue around them, called galls. *Callirhytis* galls are big and ugly and kill whole branches, but these 'oak apple' galls only kill little twigs, at worst. Dozens of different parasitoids control their numbers as eggs are injected inside the developing wasp to feed. The intricate ecology surrounding these galls, and broader ecosystem surrounding their oak hosts, are not well understood."

►

Dendro Solution (continued)

"And they have been around for a while," I added. "Oak Apple Day is a festival that some still celebrate in England, to commemorate the end of their civil war and the restoration of the throne. It's a time for dancing and parties, when people pinned oak twigs with oak apples on their clothing. Children would challenge each other to show their oak sprigs or apples, and those caught without them would face some form of punishment, like being pelted with bird eggs."

"The Wildlife & Countryside Act of 1981 was one of the most important pieces of environmental legislation in English history. It is now an offense to intentionally take or destroy a nest or egg of any wild bird... but is there such a law in Oregon?" Codit wondered. "I hear they are very aware of trees and other environmental values. But even if there isn't, I'm going to look for some oak apples to wear when we go to Portland next summer for ISA's annual conference. I definitely want to get up into one of those sequoias."

Guy Meilleur is an ISA Board-Certified Master Arborist and international consultant with Better Tree Care (Apex, North Carolina, U.S.).

JUST FOR FUN

Tree Risk

Directions: Unscramble each of the clue words on the left in the spaces provided. Copy the letters of the numbered boxes at the bottom to reveal the final key word. Each clue word was taken from the article, "Tree Risk Assessment: A Foundation."

Answers on page 64

NURJIY			J	U	R	Y				
BARLOPIYTIB	P	R	O	B						
TATGER	T					T				
NUVLIEAATO	E	V	A				T			
CAIMPT			P		C	T				
PONISURTID		I	S	R					O	
LEUFAIR	F	A	I	L						
COPCCNYUATEAR	O	C						C	Y	R

Key Word:																	
		T	I		A			O			P			O		S
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17