Herbie 1793-2010

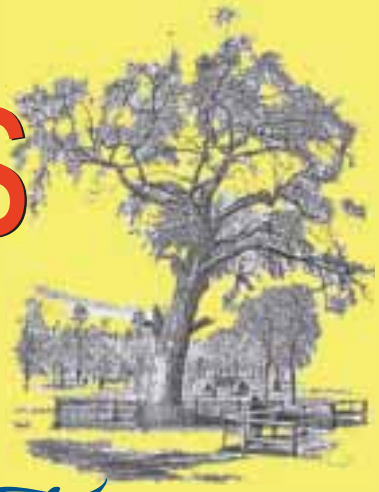
1765–1793

To commemorate the end of the Revolutionary War, elm tees were planted, lining streets throughout New England. Herbie may very well have been a true “Liberty Elm.”

Prior to 1930

The graceful American elm once lavishly shaded streets in many New England towns and cities.

A Champion's Legacy



By Jan Santerre

The American elm tree (*Ulmus americana*) has a long history in the United States as a symbol of freedom. During colonial times in Boston, American patriots would gather beneath a majestic elm to plan their opposition to British rule. In 1765, colonists hung effigies of Lord Butte (with a name like that, who wouldn't hang him?) and Andrew Oliver from this tree in opposition to the Stamp Act.

The tree became known as the "liberty elm," serving as a symbol of colonial defiance against the British. When the Revolutionary War was over, thousands of elms were planted to commemorate this history. Perhaps it was at this time that Maine's most famous elm was planted. One can only guess, but it's not much of a leap to think that "Herbie" was a part of this initial tree-planting effort taking part across the newly formed United States. Or perhaps this graceful giant was just a relic, left behind when the land was cleared for pasture.

Left: Herbie-the-Elm, Peter Lammert, and Frank Knight, Herbie's life-champion, on the 2010 Day of Reckoning.

More than 200 years have passed since Herbie first took root, 217 according to the Maine Forest Service's official tree ring counter. The elm tree that once graced the corner of East Main Street and Yankee Drive in Yarmouth, Maine, population 8,500, has been removed, and all that is left now is a gaping hole waiting to be filled. The beautiful tree known affectionately as Herbie is now board lumber and handcrafted, turned wood items. Though nearly as old as our nation is young, the real story of Herbie did not begin until the middle of the 20th century.

It could have been anywhere in the eastern United States of the day; the story was the same. The revolutionaries who had won the war for independence and planted liberty trees on every street in America didn't know they were creating a monoculture–one that would face a more silent attack hundreds of years later.

1930

Shipments from Europe of foreign elm lumber introduce the fungal pathogen.

1956–2009

Herbie was given special care with fungicide injections to protect against the ravages of Dutch elm disease.

2010

Herbie comes to the end of his 217-year-old noble, standing life. His story doesn't end here though; read part 2 in an upcoming issue.

Streets were lined with elms, some with double rows, which created a tunnel of shade over our urban streets. Below ground, their roots worked together, interlocked and grafted, helping out one another in times of drought, but in this case creating a domino effect of disease transmission.

DUTCH ELM DISEASE

Prior to 1930, shipments of unpeeled veneer logs from Europe introduced two strains of Dutch elm disease to the United States. Named for its initial diagnosis in the Netherlands in 1921, the disease was first diagnosed in dying American elms in 1930 in Cleveland. The disease spread rapidly eastward, with Maine and New England seeing the first trees lost to Dutch elm disease in the 1940s and 1950s. New England towns began systematically appointing a tree warden in each community to address the issue of dead and dying trees.

Dutch elm disease control includes removal and landfilling of infected material.

In 1956, Yarmouth, Maine, took the initiative to appoint its first tree warden. Local pulpwood dealer Frank Knight, who now is 102 years old, was tapped for the job, which, in his words, was to "monitor the trees and take the blame if something went wrong." As a pulpwood dealer, Knight was no stranger to cutting down trees. He spent his boyhood in nearby Pownal, Maine, where he took his first job cutting wood at age 12. He was paid $144 for 12 cords hauled to mill on a horse-drawn sled. He later went on to earn his bachelor's degree in forestry and to run his own logging business. In 1958, he removed Yarmouth's first diseased elm; over the years hundreds more followed.

Dutch elm disease initially was controlled with insecticides, specifically DDT, which targeted the elm bark beetle. When the use of DDT was stopped in Yarmouth, prior to the eventual ban of the persistent pesticide nationally,

managers had to find something else to control the disease.

Management options remain largely the same today. We rely on several approaches in a comprehensive Dutch elm disease management program: reducing the carrier population of elm bark beetles with registered insecticides; sanitation of diseased elm materials, exploitation of natural host resistance; and the injection of fungicides. Yarmouth started losing its elms by the hundreds during the 1970s, according to Knight. Historic photographs show huge elms, including Herbie, lining East Main Street leading down to the Royal River. All but Herbie were removed in this period.

Knight could not bring himself to cut down Herbie. There were signs of the disease, but the tree was so big, so majestic, that he couldn't bear to do it. Little did he know it would be one of the greatest gifts he made to the town of Yarmouth and its residents.

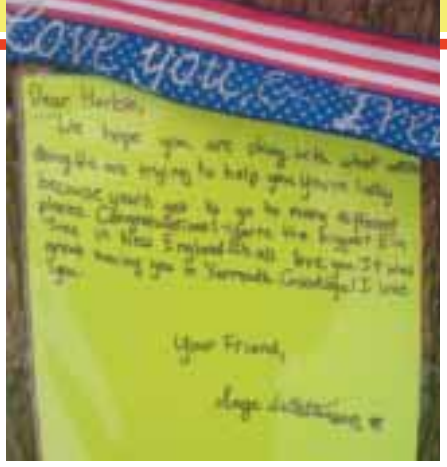
HERBIE'S NAME AND FAME

At the time, sanitizing infected branches of elms had not been largely tested. Nonetheless, Knight called upon crews to remove branches, making sure they cut beyond where any of the infected sapwood could be detected. It was during one of these pruning calls that Knight learned of Herbie's pet name.

A young Donna Felker and her friends approached the tree crew calling out, "No, no, don't hurt Herbie." Knight recalls the moment vividly, and the name stuck.

"We went on to cut disease out of Herbie 13 different years," recalls Knight. "You've got to get that thing out of there quick. The wood in the limb has brown streaks in it, so you have to cut back beyond the brown streaks underneath." The tree also received injections of fungicide every one to three years.

In 1980, Knight first nominated



A final goodbye from a local schoolchild.

Herbie to the Maine Register of Big Trees. At the time, Herbie had a circumference at 4.5 feet of 19 feet, a height of 115 feet, and an average crown spread of 110 feet. The tree was crowned champion, and soon became the New England record holder as well, a title the tree held until it was removed in January 2010.

Herbie didn't stop growing either. Once fungicide injections became less frequent, the tree had a growth spurt, evidenced by look-

ing at the tree rings once the tree was removed. In the most recent publication of the Maine Register of Big Trees in 2009, Herbie tallied in with a circumference of 20 feet, 4 inches, a height of 110 feet, and a crown spread of 120 feet. For a tree of its age, the circumference growth is impressive.

For Knight, Herbie was always a champion, even before the numbers proved it. I was first introduced to both Knight and Herbie in 2000, as manager for the state's Register of Big Trees. I met Knight at his home, and we drove in his car to the tree. He was 96 at the time, and in amazing condition. He wanted to approach the tree giving me the most impressive view, so we drove along side streets to come out from the canopy of smaller trees to be awestruck by Herbie's size. As we approached the elm, Knight grinned from ear to ear, beaming, "Isn't he beautiful?" His love for the tree was infectious, and I, too, was smitten.

A tree of such size does not come down easily. Local and state officials knew well in advance that taking down such a prominent fixture in the heart of town would cause some controversy. At the same time, the newly appointed tree warden, Debra Hopkins, recognized the opportunity at hand to tell the story of her mentor and friend, Frank Knight, and his affection for the trees of Yarmouth.

A special town committee was formed to begin the process of deciding when and how Herbie would be removed. The net was cast wide in selecting committee members to include both local and state officials, arborists, a sawmill owner and operator, furniture makers and woodworkers, local businesspeople, residents, and advertising and fundraising experts.

The group worked swiftly to decide on a date when the tree would come down that would minimize traffic on busy Route 88, while also allowing the public to view the historic event. Hopkins

Branch trimming and extensive disease control measures hardly diminished Herbie's size.

wanted to make sure that Herbie remained on the Big Tree Register one last year, so the event was scheduled for January 18, 2010—Martin Luther King Jr. Day.

THE HERBIE PROJECT

The group could have left it at that, but they didn't. The opportunity to share the story of Herbie and Frank was so great; the group decided what better way to do that than create keepsakes from any remaining sound wood in the tree.

But what was there? Maine Forest Service forest pathologist William Ostrofsky had completed a core analysis of the tree prior to the determination that Herbie had to come down. The results of the analysis were telling, but not telling enough. A 3-foot increment borer was painstakingly drilled into the tree to reveal not only the extent of the infection, but the soundness of the wood.

The core reached just under 22 inches into the tree, or roughly halfway to center. The infection was found to be systemic, leading to the conclusion that there was no way to save it, and the wood was sound, at least for those 22 inches. There was evidence that the tree had what is called "wetwood," common in elm, a condition that darkens the wood as it holds additional water. The question remained, however, whether Herbie was solid through the center. That question would have to wait to be answered when the tree was felled.

The community effort was named the "Herbie Project," and the group set to informing the media and the public what was happening. Before long, the news of Herbie's demise had travelled around the world, with an outpouring of suggestions on how to save the tree, how to utilize the wood, and a fair bit of criticism on everything from the disregard of Frank's work to save the tree to the estimated cost of removal. None of that mattered, though. The response was largely positive, and the story captivated the hearts of thousands.

Frank Knight's adoration for this one tree was contagious. Hopkins said it best when, during an interview, she shared, "Frank loves the tree, and I love Frank." Letters began pouring in, and poems, and people travelling hundreds of miles just to get one last look. Herbie, and his gentle caretaker, became an overnight celebrity.

Committee members, led by Hopkins and Marcia Noyes, director of Yarmouth Community Services, made quick work of contracting the arborist services and sawmill, as well as sending out the call to artisans and woodworkers interested in crafting items from Herbie's wood. The removal date was quickly approaching when the group also recommended some material be collected from the tree to attempt reproduction. The area was scoured, including fallow ground located behind the Felker home as well as across the street, and in the lilac hedge that radiated from Herbie's base. Not a single progeny could be found.

Instead, Hopkins spoke with David W. MacDonald, owner and operator of Whitney Tree Service of Gray, Maine—the selected arborist—to go ahead and remove living bud material from the crown. The bud stock was picked up by Thomas Hoerth, Southern Maine Community College arboriculture professor, to work with his students as part of their grafting curriculum.

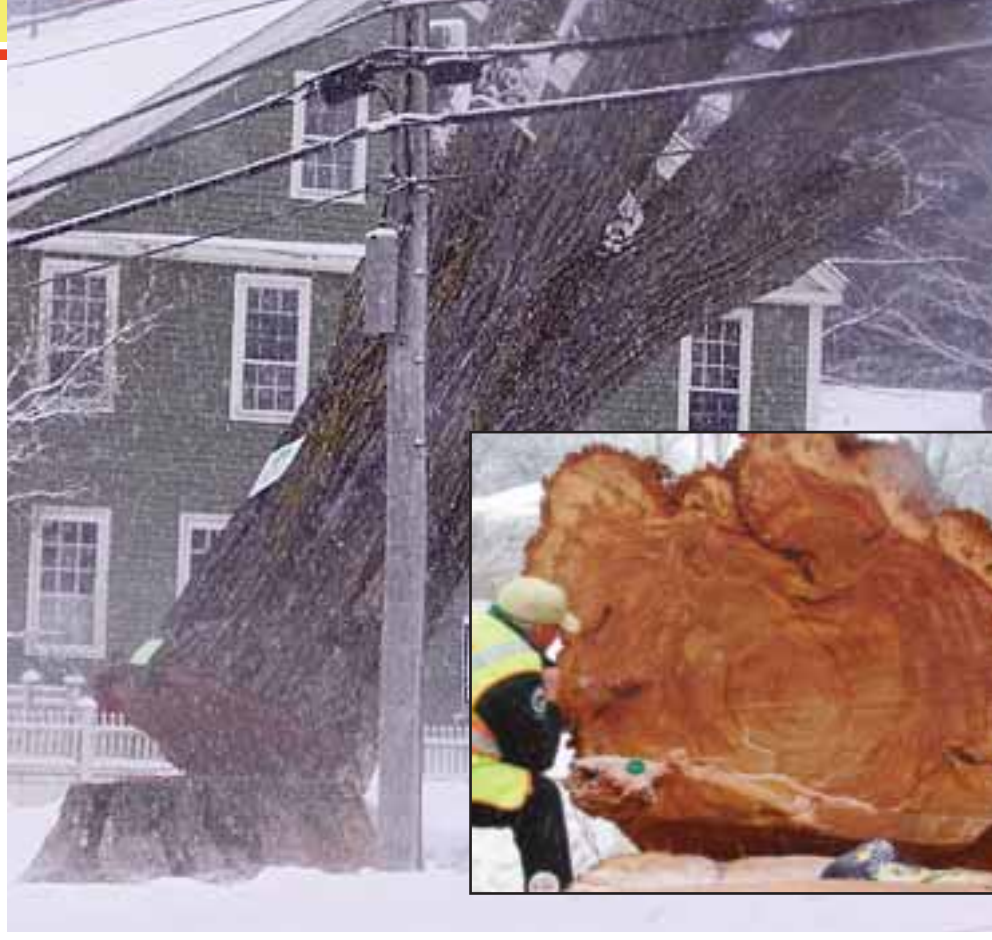
THE REMOVAL

January 18, 2010, arrived with a nor'easter (for those readers unfamil-

iar with the term, that's a really bad snowstorm in New England). The removal would have been too difficult and unsafe in those conditions; therefore it was postponed to the following day. Herbie, it seemed, wanted to have the last word.

The next day was not much better, with steady snows, but conditions were deemed safe enough to forge ahead. Whitney Tree Service hired a 127-foot boom, 85-ton crane from Cote Crane in Auburn, Maine, to remove the upper limbs, as well as to lift the trunk section onto the flatbed trailer for the trip to the sawmill.

Beginning at dawn, the setup began, and around 7 a.m. the Whitney crew was already at work removing the seven remaining leaders. Climber Brandon Brewer ascended the crane where he set the slings for lowering the stems. Arborist Matt Jackson maneuvered Whitney's 65-foot aerial lift to notch and backcut each leader, and



Herbie's felling revealed an average trunk diameter of 6.5 feet, and a ring count estimate of 217 years.

once safely out of the way, Maarten Zwaan gently rocked each stem off its hinge and lowered it to the ground crew. Once on the ground, the crew removed all smaller branches—which were immediately chipped—and sectioned the stems into log-length material, which was loaded onto the tri-axle pulp truck.

Once all the leaders were down, it was time to prep for the final cut. In an attempt to preserve any solid wood in the main stem, the arborists had planned to fell the main stem in its entirety. The Whitney Tree Service crew, owner, and managers gathered at the base of the tree adorned with their sign for one final picture. Shortly after 10 a.m., arborist Jackson started the directional felling notch with the company's Husquavarna 395 XP chain saw, which sported a 52-inch bar.

Once the notch was removed, Jackson, working with another Husquavarna, this time with a 39-inch bar, cut the center section, leaving hinges on either edge of the notch. Meanwhile, crew members worked to assemble a shock absorber consisting of old truck tires topped with a 26-inch pine log 16 feet long placed across the top to soften the landing. They also placed half-inch wire slings in the snowbank to allow the crane to lift the trunk section once felled.

At the last biweekly Herbie meeting in Yarmouth, Peter Lammert, a forester with the Maine Forest Service, was designated as the "Official Ring Counter" to determine how old Herbie was. Frank Knight had estimated Herbie's age at roughly 235 years, based on the ring count of a sister elm removed in the 1980s. While the crew prepared for the final cut, Hopkins arrived with Knight, so he too could look on.

Initially, Knight didn't want to be on hand to see his old friend come down. He knew it was the tree's time, though, and he remained active in the decision-making process throughout. Knight eventually changed his mind, and watched from the shelter of Hopkins' vehicle while Jackson worked his saw around the base.

Knight looked on with the same regard he did the first time he introduced Herbie to me. Even with all the limbs removed, the tree was still a commanding presence.

The majestic elm came crashing dramatically to the ground shortly before noon to a crowd of cheers, and more than a few tears. Several dozen onlookers descended upon the remains of the tree to get a firsthand look at how big Herbie really was, and what the internal condition looked like.

Much like the external shape, the wood was in beautiful condition, with little to no decay present. A stoic Frank Knight was driven close enough so he could walk up to the now prone Herbie and look on while Lammert counted the rings.

Lammert made a preliminary count of 212 rings on the end of the butt, while Phil Norris, tree warden

At the mill, Herbie is thoughtfully sectioned, readied, and sawed into sought-after lumber, and pieces for woodturning. Bookmatched lumber on the left shows the unique grain and character of the wood.

from Blue Hill, counted 215 rings on the stump. Both agreed that a "cookie" or a horizontal cross section, should be dried, sanded, and counted under magnification for an official age determination.

Once that was settled, the crowd was again pushed back so the Whitney crew could begin the process of loading the main stem on the trailer. They first had to remove the seven leaders down to the crotch, which generated another half truck load of Herbie wood. One final cut was made to bring the trunk to within legal weight limits. The trunk was then lowered onto the low-bed trailer provided by Dugas Construction.

According to the onboard scale in the crane, this section weighed in at just under 20 tons. The tree was secured with five half-inch chain binders. With the pulp truck loaded with Herbie's upper branches in the lead, what felt like a funeral procession of the low-bed trailer and a dozen cars and trucks left for Joe Sullivan's custom sawmill in New Gloucester, Maine.

Given the drama of the entire situation, it came as no surprise that the 15-mile trip to the mill was not without complications. The weather throughout the day didn't improve, and in fact, by the time the convoy headed inland toward the mill, the snow was falling at a steady pace and had created slippery road conditions.

All went well until roughly the final mile of the journey, where Route 231 begins a long rise into New Gloucester village. The low-bed trailer carrying the main stem started losing traction about halfway up the hill and had to stop. Road crews were called to salt and sand the road, which did the trick. Herbie was again on his way and proceeded the final stretch to Sullivan's.

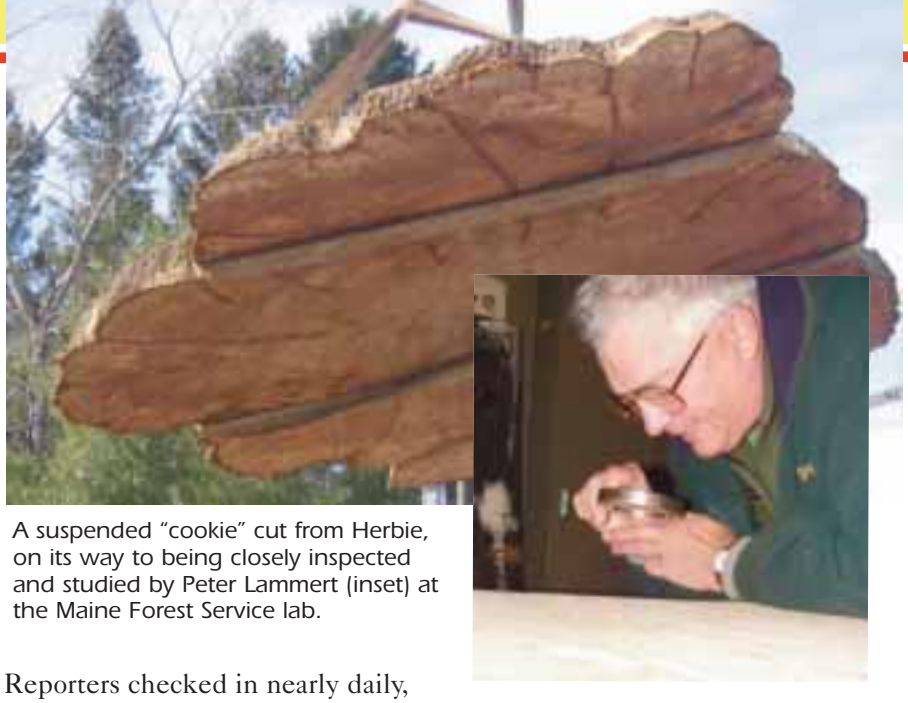
HERBIE'S AGE AND HISTORY

Weeks later, Peter Lammert, MFS forester and "Official Ring Counter," and Thomas Hoerth, Bath city arborist and SMCC arboriculture professor, gathered at the Maine Department of Conservation's Bolton Hill facility in Augusta, where one Herbie cookie had been stored for drying.

Dutch Elm Disease

Dutch elm disease is caused by a fungal pathogen, *Ophiostoma ulmi* or, more likely today, *O. novo-ulmi*. When first brought to North America, one or two species of Dutch elm disease were introduced, possibly leading to hybridization of the two and formation of the much more virulent *O. novo-ulmi.*

The disease is spread locally up to several kilometers by the elm bark beetle and long distance by people transporting untreated wood with the bark on. Two types of elm bark beetle serve as vectors



A suspended "cookie" cut from Herbie, on its way to being closely inspected and studied by Peter Lammert (inset) at the Maine Forest Service lab.

Reporters checked in nearly daily, along with the Herbie Project Committee member tasked with securing the brand to be used on official Herbie wood, to find out the official age.

In the warm and dry storage garage, each separately counted the growth rings to 201 years. From there, the growth rings close to the pith were so tight they were almost indiscernible. To add to the problem, there was a small crack straight through the pith. To make the final determination, a sliver of wood was marked with the last known age, 201, and then taken to the Maine Forest Service entomology lab where it was examined under the magnification of a dissecting scope.

The scope confirmed the age at 217 years, meaning that Herbie sprouted in 1793. Looking at the cookie also revealed a bit of Herbie's past, including exceptionally good growth years between 1954 and 1960, when Maine was hit with a series of hurricanes, as well as some clues to Herbie's beginnings. The tight growth rings at Herbie's center reveal that the tree was either moved as a sapling to the location at the corner of Yankee Drive and East Main Street (that later became old U.S. Route 1), or the trees surrounding it were cleared, allowing for the tree's growth to take off as a teenager.

When asked for his reaction to Herbie's removal, Knight is extremely positive. "His time has come, and mine is about due, too," said the former tree warden. "I am just glad we were able to keep him for so long."

Knight was honored by Governor John E. Baldacci at the state's annual Arbor Week awards ceremony in 2010, recognizing his 50 years of dedicated service to the town of Yarmouth and its trees, particularly as guardian for Herbie. Knight was "overwhelmed" by the honor, and said, "I never knew Herbie would attract quite that much attention," while he accepted his plaque from the governor and the crowd stood in ovation.

While the tree that stood proudly on the corner of East Main Street and Yankee Drive may be gone, Herbie's story is far from over. Woodworkers and crafters throughout the United States are working with the lumber produced at the sawmill, and some preliminary products have already been made from the wood. Artists have captured Herbie's statuesque form in photos and woodcuts, and authors have come forward hoping to capture the story for a children's book. A final auction of Herbie wares will take place in November 2010 at the DeLorme headquarters.

All proceeds will support the formation of the Yarmouth Tree Trust, which will forever endow the planting and care of Yarmouth's future champion trees.

A follow-up article discussing the processing of Herbie's wood at the mill, the challenges inherent with drying and working with this wood, and it's utilization will be presented in a subsequent issue of this magazine. ■

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for the disease. The native elm bark beetle, ***Hylurgopinus rufipes***, and the European elm bark beetle, ***Scolytus multistriatus***. Beetles are attracted to healthy elms, and bore directly into the inner bark, cambial region, and outer sapwood, and while feeding deposits the spores of Dutch elm disease.

Upon infection the disease spreads rapidly within the vascular (water-conducting) system of the tree. While the tree attempts to wall off the disease, it prevents the flow of water and nutrients to infected branches, causing them to yellow and wilt long before typical fall coloration would appear.

Once the disease reaches the root system, it proliferates and spreads rapidly in a systemic infection throughout the tree, as was the case with Herbie. Once this happens, the fate of the tree is sealed, and removal is necessary to prevent further spread of the disease to healthy elms. Furthermore, in those cases where the elms grew close enough together to form root grafts, the disease spreads rapidly, killing trees in large blocks.