

Some of Washington's Biggest Trees Are Dying and Scientists Don't Know Why

By Craig Sailor

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Something is killing bigleaf maples — Washington's biggest broadleaf tree — and scientists can't stop it. They don't even know what's causing it.

"We've looked for everything we can possibly think of and what people smarter than us can think of," said Amy Ramsey, a forest pathologist with the state Department of Natural Resources.

From British Columbia to California, stands of bigleaf maples are dying, leaving bald patches in the forest canopy or even denuded hillsides.

Reports of dying and dead maples first reached the DNR in 2010, Ramsey said. Foresters noticed the trees were producing small, scorched-looking leaves or none at all. Sometimes, the crown — the upper most branches of the tree — would die.

The reports, from forest professionals, were scattered at first. Then the public began to call.

"The public had questions, and we didn't have answers," Ramsey said.

When the DNR began to survey state forests, it found the problem was widespread.

Since then, the number of trees affected has grown.

Several agencies — including the DNR, the U.S. Forest Service and the University of Washington — have been studying the maples but no diseases or insects have been found in significant numbers to be a culprit.

"It is still a mystery," Ramsey said.

Grand Dame of the Forest

Acer macrophyllum, the tree's Latin name, translates as "maple large leaf." The leaves are the biggest in the maple world, reaching a foot in width.

The tree can grow 100 feet tall and have trunks with a diameter of five feet.

It's also prolific. It's the second most abundant hardwood tree — after alder — in the Pacific Northwest. The maple's native range stretches from Northern California into British Columbia.

Take a drive along Point Defiance Park's Five Mile Drive and you'll find plenty of big, healthy bigleaf maples with huge green leaves.

But across the road from the park's new Pacific Seas Aquarium and next to a footbridge is a sickly looking bigleaf. Some branches are bare. Others have shrunken leaves. Some of the leaves are scorched — green in the middle, dead and dry on the margins.

It's a classic look for the mysterious ailment. This tree has been dying for several years. Several of its trunks were recently cut back after their crowns died, said Mark McDonough, Metro Parks Tacoma urban forester.

"There was just a tremendous amount of dead wood over that pathway, so I had a contractor come in," he said.

McDonough has noticed declining health in many of the



Craig Sailor / The News Tribune

The leaves of this bigleaf maple at Point Defiance Park show signs of leaf scorch, one sign of the die-back affecting the species throughout the Pacific Northwest.

trees under the jurisdiction of Metro Parks for the past three years, but not a disproportionate number of maples.

The situation at Woodard Bay Natural Resources Conservation Area north of Olympia is more dire. There, hundreds of bigleaf maples in various states of illness stand along the waters and among healthy conifers.

Some trees have been dead for years. Others, their leaves small and yellow, stand side by side with healthy maples.

Personnel at Thurston County Parks have seen increased deaths of bigleaf maples, said spokesman Bryan Dominique. A large maple will soon be felled at Kenneydell Park, he said.

The loss of the big maples is about more than just losing a majestic tree.

Whether they're at Point Defiance or draped with moss in the Hoh Rainforest, bigleaf maples are so large they support a virtual bed and breakfast for creatures.

Licorice ferns grow on its branches, birds nest in cavities and creatures crawl in the litter of its leaves on the forest floor, said Ken Bevis, a stewardship wildlife biologist with the DNR.

Pollinators thrive on its flowers, and animals eat its seeds. The trees provide much needed shade for salmon-bearing streams, Bevis said.

The tree is also valuable to people.

Although the tree isn't grown for timber, it is used for everything from cabinetry to piano frames. Burls of the tree — where the wood grain moves in whorls — are so valuable that maple poachers are a problem in parts of Washington.

'They Were All Dying'

Fall is just days away, and soon leaves of deciduous trees like the maple will turn yellow and drop. Some trees will die from old age — the natural succession of the forest.

Those characteristics would make it easy for a new disease to affect the maple and go unnoticed for years.

But, it didn't go unnoticed on the land of Patty Vance. She and her husband own 150 acres of timber near Randle in Lewis County — an area hit particularly hard by the maple decline.

Vance has been on her land for 50 years. She estimates 10

percent of her trees are maples. She said she's noticed the die-back for more than 10 years.

"We started to see a decline," Vance said. "The leaves would start to get stressed looking and a little smaller and sparse."

In addition, the tree trunks would turn black. At first, Vance's husband thought his wife had burned the trees.

"He accused me of making fires at the bottom of live maple trees and making their trunks all charcoaled," she said. "Which I wasn't. They were all dying."

It takes three to four years for the trees to die, Vance said. The decline on her property hits trees when they are about 20 years old, Vance estimated.

"It hasn't been a horrible thing for us," Vance said. "We harvest our trees for fire wood."

Still, she is concerned.

"There's a lot of different diseases we have to deal with that kill our trees," she said. "To be a good steward of the land, you have to understand that and manage for that. So it concerns me. What if this maple business is affecting other species?"

The Hunt for a Killer

After the initial die-back reports, surveys confirmed a problem with the maples all over Washington. Soon, reports came in from British Columbia, Oregon and California.

The Forest Service and the DNR launched intensive research in 2011. Ramsey and other researchers ran through the list of usual suspects in forest pathology over several years. But one by one, suspects (verticillium wilt, bacteria, root rot, beetles, blight, leaf hoppers) were crossed off the list.

Out-of-state researchers think Washington is the hardest hit state, Ramsey said, but she is skeptical.

One thing is certain, she said: The maple decline keeps getting worse.

"We've seen increased mortality in the bigleaf maple and increased damage every year," she said.

"The symptoms aren't unusual in the trees," said Jake Betzen, a graduate student at the University of Washington's School of Environmental and Forest Sciences. "It's unusual in the sense that all these trees are dying."

Betzen is studying the bigleaf maple decline for his thesis.



Peter Haley / The News Tribune

This bigleaf maple tree in Point Defiance Park has been dying for years. Its leaves are mostly yellow and brown and dead sections have been cut off.

Small leaves, leaf scorching, a tree with dead, dying and healthy branches at the same time — all can be symptoms of any number of pathogens, he said.

"Really, the decline is a widespread decrease in tree health and vitality, and an increased incidence of tree mortality," Betzen said.

Because known pests and pathogens already have been studied, Betzen is looking at climate, pollution and other environmental factors.

He took field samples in 2017. He hopes to have his study finished by the end of 2018.

So far, he hasn't found a smoking gun, but there are clues. Affected trees are more likely to be in warmer and drier spots, closer to roads and closer to developed sites.

But from cities to remote national parks, he's found sick trees.

"Anywhere you go with bigleaf maples, you'll find declining trees," he said.

Betzen has found the decline in young trees, some with a trunk diameter of two inches.

"It's attacking young and old trees and it's attacking big and small trees," he said.

"A healthy tree won't have small leaves," he said. "It'll have big green leaves, and they'll all turn yellow and fall off (in autumn), which is natural."

Because he doesn't know what's causing the decline, a single or handful of declining trees doesn't necessarily mean all the

bigleafs in that area are affected. But it might.

Though he doesn't believe pollution is a cause of the affliction, he still will perform tests to look for it. He's also looking at tree core samples.

"There's some really big pieces of the project we haven't been able to look at yet," he said.

Going Forward

Betzen isn't expecting to find an exotic killer lurking in the forests. He thinks the culprit could be more prosaic.

"I think this is the new frontier of a lot of environmental and forest health," he said. "The world is changing around us."

Those changes include climate and increased urbanization.

"I think we're going to see more and more changes in the forest, and this is one of the way changes present themselves," he said.

Ramsey concurs.

"They are going to be the canary in the coal mine," she said of the bigleafs and other trees. "They are going to be the first indication of climate change."

Meanwhile, near Randle, Patty Vance has no more healthy and mature maples on her property.

"They're all in some sort of decline," she said.

She has advice for city dwellers. "I would think twice before having a big maple in my front yard as an ornamental tree," she said. "You fall in love with it. You wouldn't want it to just die."