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Potent tree-killing disease reemerges in the Bay Area

By **Kurtis Alexander**, Reporter

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Sudden oak death expert Matteo Garbelotto examines a leaf from a tanoak tree at his lab at UC Berkeley in 2019. His team recently discovered a new form of the pathogen driving the spread of sudden oak death in California.

Paul Chinn/The Chronicle

The tree disease that exploded in Bay Area forests three decades ago, stunning residents with vast die-offs in parks and neighborhoods before slowing, has opened a new front with a second, potentially more potent microbe now on the attack.

Researchers at UC Berkeley say they recently uncovered at least four outbreaks of sudden oak death caused by a different genetic lineage of the fungus-like pathogen that was previously known to propel the disease in California.

The new lineage has so far caused limited observable damage in San Mateo County, the Berkeley hills and Martinez — to bay laurel trees, which are among the many tree species that the disease can infect, beyond the namesake oak. The researchers fear that this vigorous form of the pathogen could soon kick up the pace of sudden oak death to levels not seen in years and perhaps burden California woodlands with even greater losses.

Early thinking is that the new source of the disease may be hastened by the warming climate.

“Obviously, this is a concern,” said Matteo Garbelotto, an adjunct professor at UC Berkeley who has long studied sudden oak death and whose lab discovered the new form of the pathogen. “We have something that is more aggressive, more infectious. It could really speed up the infection process.”

Sudden oak death, which was first observed in Marin County in the mid-1990s, seemingly out of the blue, initially confounded scientists as it went on to kill large swaths of trees in coastal California before the cause was identified in 2000: the emergence of the microscopic pathogen Phytophthora ramorum.

Once deemed the “Godzilla fungus,” the pathogen is believed to have come from ornamental plants shipped from southeast Asia to California nurseries, then jumped into the wild. The organism is known for infecting trees that, at first, show little sign of attack, only to abruptly reveal seeping cankers, brown up and die — hence the “sudden death” moniker. The pathogen has been found in other countries, but nowhere has its impact been as great as California, where millions of trees have died across 14 counties.

Three distinct lineages of the pathogen have previously been detected at nurseries in the state. Only one, however, with the exception of an isolated outbreak of another in Del Norte County, had escaped into forests — until recently.

Federally funded teams of scientists and volunteers that monitor the disease across the landscape collected, in this year’s surveys, samples of the new form of the pathogen at four sites confirmed by Garbelotto’s lab. A possible fifth site has not been confirmed.

“It was really surprising this year to find (this new form of the pathogen) at five different locations,” Garbelotto said.

The new lineage has been causing the most damage in an area north of Woodside, where a roughly 1.5-mile strip of bay laurels was infected. The pathogen was also confirmed in Atherton, the East Bay’s Tilden Regional Park and John Muir National Historic Site in Martinez.

Garbelotto’s initial analysis is that the disease is four times as infectious as the initial form to spread in California and, unlike its predecessor, it can flourish in warmer, drier conditions.

Higher temperatures and more drought over the past two decades are believed to have helped slow the advance of sudden oak death, since the worst outbreaks of the disease have generally followed rainy periods. Human efforts to

contain sudden oak death, such as quarantines on state nursery products and removal of infected trees, have also curbed the spread.

With this new form of the pathogen, however, Garbelotto worries that the disease will be able to thrive in much more variable conditions, including the heat that comes with climate change.

“It does well in the warmer weather, but it also does well in cooler weather,” he said. “That’s the problem.”

Garbelotto and his colleagues have begun reaching out to land managers in the Bay Area and elsewhere to let them know about the new source of sudden oak death, so they can help track it and perhaps take steps to confront it.

“The time to do something is now,” he said.

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REPORTER

Kurtis Alexander is an enterprise reporter for The San Francisco Chronicle, with a focus on natural resources and the environment. He frequently writes about water, wildfire, climate and the American West. His recent work has examined the impacts of drought, threats to public lands and wildlife, and the nation’s widening rural-urban divide.

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