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Jeanne Higgins, Stanislaus National Forest supervisor, talks Thursday to a guest on a tree mortality tour sponsored by TuCARE and Yosemite Stanislaus Solutions.

TREE MORTALITY

Bark beetle outbreak may be signal of larger shift

By Alex MacLean (<http://www.uniondemocrat.com/NewsroomStaffList/?person=172>), The Union Democrat

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A century's worth of total fire suppression that has created unnatural tree density in California forests compounded by increasing global temperatures and prolonged drought periods will lead to big changes for the Sierra Nevada landscape in the coming decades.

Despite current efforts to manage the latest bark beetle outbreak killing millions of trees throughout the state, experts say the beloved pines of the Sierra Nevada may be dominated more by oaks, cedars and other types of trees that are better adapted to survive a drier, warmer climate.

"I know that we're all attached to the way things look around us, but we need to be prepared for that to change," said Tom Hofstra, a forestry and natural resources instructor at Columbia College. "There's really not that much we can do about it at this point."

Hofstra moderated a panel discussion on the topic Thursday night in the Sonora High School auditorium hosted by the Columbia College Foundation. A summit hosted Friday morning by the Tuolumne County Alliance for Resources and Environment, or TuCARE, also focused on the fallout from the tree mortality epidemic.

Eric Knapp, a research ecologist for the U.S. Forest Service, gave the keynote address at Thursday night's event. He has conducted research on forest management at the Stanislaus-Tuolumne Experimental Forest that encompasses 1,700 acres near Pinecrest.

Knapp talked about his research in the experimental forest that suggested fire suppression has had a greater influence on forest overcrowding than a lack of logging. He studied three plots that were left untouched since 1929, with some having been previously logged and others not.

The plots in 2008 were two-and-a-half times more dense than they were in 1929, with the density being nearly identical for both historically logged and unlogged plots. Knapp said past logging practices removed more of the larger trees from the plots, making them less diverse and resilient to fires, disease and pestilence.

"It's kind of remarkable we've been able to maintain this density until now," he said.

In the short-term, Knapp said tree mortality will lead to more biomass on the forest floor that needs to be removed to increase resiliency. He said the long-term goal should be to manage the forests for lower average densities and fuel loads by increasing the pace and scale of treatment through thinning, prescribed fires and managed wildfires.

Other speakers at Thursday's event were Beverly Bulaon, a Forest Service entomologist, Terry Strange, a biological consultant specializing in wildlife and fisheries, and Lara McNicol, a Columbia College adjunct instructor whose family has owned Browne's Meadow Ranch for 150 years.

Bulaon said that historic patterns of increased bark beetle activity in California forests closely follow drought periods. Water-stressed trees are more susceptible to infestation by the rice-sized beetles that are native to California.

Although aerial surveys conducted by the Forest Service in May estimated 66 million dead trees across the Sierra Nevada range, Bulaon said she expects that number to increase when results from new surveys are released in the coming weeks.

Other studies have found as many as 888 million trees throughout the state that show signs of measurable water loss in their canopies.

"From a lot of the literature that's coming out, the drought that we're having right now is really unprecedented in how little precipitation we've been getting," Bulaon said. "It's just something the bark beetles are responding to."

McNicol, who teaches forestry and natural resources at Columbia College, spoke from a personal perspective about the changes she's witnessed occurring on her family's land since she was a child and management practices they have employed.

Over the past 10 years, McNicol said the amount of snowfall the property receives each year has declined significantly. Fire suppression over the past five generations has also led to conifers encroaching on the meadows.

McNicol said observations by county residents about the changes are just as valuable as research and studies.

"This is all very important stuff to chronicle," she said. "We are a part of history. The Sierra Nevada is changing, and we get to be here for that."

The 15th annual Natural Resources Summit hosted by TuCARE in the Sierra building at the Mother Lode Fairgrounds took a slightly different approach to the topic, focusing more on the effects of the tree mortality crisis and responses by lawmakers, public entities and private interests.

TuCARE is a nonprofit organization based in Sonora that advocates for timber, mining and agricultural interests, conservation and multiple-use policies for natural resources on public lands.

Stanislaus National Forest Supervisor Jeanne Higgins said the Stanislaus, Sequoia National Forest and Sierra National Forest are three in the state most impacted by the current situation. Aerial surveys have consistently found more and more dead trees over the past three years, from 3.2 million in 2014, to 29 million in 2015, to the current estimate of 66 million.

The Forest Service has felled over 166,000 dead trees across 18,000 acres to date, with 48,000 more acres targeted for work. She said more than 40,000 trees were felled in the Stanislaus National Forest over the past year alone.

Higgins said the current ecological disaster could be viewed as an opportunity to try different strategies.

“Our normal response has been to take the things that have worked well for us in the past and apply it to a problem,” she said. “This problem is not the same as anything we’ve dealt with in the past, so we need find different ways to approach this into the future.”

Rick Carr, regional resource manager for Cal Fire’s southern region, said warmer winters are also contributing to the beetle problem. He said the warmer cycles have lengthened the reproductive cycle of the beetle, allowing them to reproduce up to four times per year instead of two.

Carr displayed a graph showing how mean global temperatures are two degrees higher now than in 1895. The increasing temperatures have also led to fire seasons in California being up to 78 days longer than they were three to four decades ago.

“While only two degrees may not appear significant on any given day, a warming trend has far-reaching consequences to weather patterns, species diversity and resiliency,” he said.

Carr commended the county for being a leader around the state in getting resources on the ground to address public safety concerns from tree mortality. He said the agency is encouraging other counties to model programs based off what Tuolumne has done.

In closing, Carr showed a picture of Lake Arrowhead in San Bernardino County during the midst of a bark beetle epidemic in 2003. Many brown, dead pines surrounded power lines and home along the road.

Carr showed another picture taken this year of the same area and only one pine is still visible, with other types of trees now dominating the landscape.

“The forest is changing,” he said. “It’s not going to be the full, pine-dominated forest, but there will be a forest there.”

The summit also featured speeches from Congressman Tom McClintock, R-Roseville, Assemblyman Frank Bigelow, R-O’Neals, and a panel discussion featuring representatives of Sierra Pacific Industries, the California Biomass Alliance, California Forestry Association and Sierra Nevada Conservancy.

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