



Dr. Tom Swetnam

Seeing the Forest Through the Trees: The Age of Mega-Fires

EXCLUSIVE

Tom Swetnam is the director of the world’s premier tree-ring research laboratory and a scientist who has a unique view of climate change on our planet. He has studied tree rings in the world’s largest and oldest trees – giant sequoias and bristlecone pines -- and his studies track the history of forest fires, insect outbreaks, and climate over the past 3,000 years. Dr. Swetnam has traveled and studied tree rings across North and South America and in Siberia, Russia. His research and collaborations with colleagues and students from around the world have provided basic insights on the influence of people and climate on changing forests.

As a Professor of Dendrochronology (the study of environmental and cultural history using tree rings), he heads the world’s first and largest laboratory dedicated to all aspects of tree-ring investigation: The Laboratory of Tree-Ring Research at the University of Arizona, Tucson. His work has attracted the attention of CBS’ *60 Minutes*, *The New York Times*, *National Geographic Magazine*, and countless media outlets around the world. His laboratory, a “woodpile,” is the largest collection of tree rings in the world, dating back more than 9,000 years and each ring captures one year of climate history.

Dr. Swetnam’s groundbreaking and provocative findings indicate that regional warming is already affecting forests in the western United States, with potential for “a positive feedback effect” on global warming. Megafires have burned hundreds of thousands of acres, destroyed thousands of homes, and have caused devastating damage to natural resources. Fire-fighting expenditures for wildfires in the U.S. now regularly exceed \$1 billion per year.

In a trail-blazing article in *Science Magazine* in 2006, Dr. Swetnam showed that one degree of Fahrenheit temperature increase translates into an increase in the frequency and duration of large wildfires in the U.S. West. Since the 1980s, warming and drying has caused the fire season to increase more than two months and sparked four times more fires.

The predictions are not good. Trees take in carbon dioxide, the main greenhouse gas, and release oxygen. Western U.S. forests remove 20 to 40 percent of the carbon dioxide in the country. As forests burn, carbon is released into the atmosphere. Fewer trees then remain to carbon dioxide out of the atmosphere, making warmer conditions, supporting more and longer fires—the feedback effect.

In his *60 Minutes* episode, Dr. Swetnam predicted there’s a reasonable chance half the forests of the West could be lost.

In recent decades, Dr. Swetnam’s colleagues in Tucson have carried out research cited in global and regional assessments of climate change and human history, including the 4th Intergovernmental Panel on Climate Change, Jared Diamond’s bestseller “Collapse”, and a recent National Research Council review of drought impacts on the Colorado River.

Dr. Swetnam, who spent two years as a seasonal firefighter in the Gila National Forest of southern New Mexico, has published more than 90 scientific papers and he has received awards for his published research from Ecological Society of America and the American Association of Geographers. As a forest ecologist

dedicated to applying the wisdom of historical perspectives to natural resource conservation, he has served on presidential and governor-appointed boards and panels, and he has testified to Congress on several occasions.

For over two decades, Dr. Swetnam has spoken to hundreds of public groups as a keynote or featured speaker. His presentations focus on the remarkable human and environmental histories provided by tree rings. These histories speak to the intertwined nature of people, place, and time. The beauty and aesthetics of ancient trees and the places they survive is combined with the fascinating fates of ancient cultures. The stories that tree rings tell are lessons from the past and warnings for the future.

Examples of Presentations (tailored to audience interest and backgrounds):

Anasazi, Drought & Forest Fires: History From Tree Rings

Using historical and modern photography and video, Dr. Swetnam tells the history of tree-ring dating and its applications in archaeology, climatology, and ecology, with a special focus on the cultural and environmental history of the Southwestern United States. Historical perspectives on climate and human responses are highlighted in the context of recent climate changes and expected future changes.

Drought, Pestilence and Fire: Forest Apocalypse?

Reviewing recent scientific results from across North America, and elsewhere around the globe, Dr. Swetnam describes the massive changes now occurring in many forests as a consequence of warming and drought trends. Mega-fires and regional bark beetle outbreaks in the context of climate and land use history are a particular focus of this presentation. This presentation is concluded with a discussion of potential policy and resource management responses.