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Dry Forests Result in the Scourge of Insects **By Dr Reese Halter**

Western North America is drying up. The three worst fires seasons in modern times – 1988, 2000, 2002 – have occurred over the past 15 years. That’s about 18 million acres of forestland consumed in just three years, not counting about 20 million acres burned in the previous 12 years.

To make matters worse, when drought sets in on our Western forests, bark beetle population soars.

How severe is the current drought? Last year in Arizona, a one-in one-thousand-years event was experienced – that means it hadn’t been that dry for at least the last 1,000 years. Tree scientists are able to look at living trees, by retracting thin cores revealing tree rings. Then they compare trees from Colorado with trees from Arizona and California (and elsewhere) and are able to exactly reconstruct western North America climates as far back as 9,000 years ago.

Trees are living museums. The bristlecone pines of the White Mountains in California have witnessed 1.8 million sunrises, which makes some of them almost 5,000 years old. There are dead standing and fallen trees (with rings intact) that allow tree scientists a glimpse as far back as the end of the last glaciation – The Pleistocene. Tree ring widths are examined under a microscope. Wider ring widths translate into a wetter summer and narrow rings into a dry summer.

When our western North American trees experience a dry summer, they obviously don’t grow. And, most western North American evergreen trees – spruces, firs and pines – have a special mechanism gooey pitch – to protect them from mechanical damage (like a branch snapping off) or an insect attack. Droughts weaken trees by not only denying them food but significantly reducing their production of pitch. Without pitch, and lots of it, trees become sitting ducks to insatiable bark beetles.

Insects and in particular bark beetles are extremely opportunistic and an excellent barometer to changes in our climate. They thrive when conditions get dry. There are at least three environmental factors that control western North American bark beetle populations: 1) cold temperatures – particularly in late fall – killing next generation beetle eggs, 2) lack of food – beetles will continue consuming until there is nothing left to eat, then their populations will crash, and 3) fire.

There are about 6,000 kinds of bark beetles on Earth. Presently, four species (most notably mountain pine, western pine, engraver’s and spruce beetles)

are wreaking havoc, killing hundreds of millions of trees in western North America. In addition, spruce budworm, a defoliator, and scale, a microscopic leaf sucker, are feasting on billions of needles.

Dry trees sending out chemical messages are acting as a beacon to mbillions of voracious forest insects.

How bad is it? The most common ecosystem in Western America is that of the ponderosa pines. Western pine beetles are now breeding three generations in one year (up from two generations in one year). The lodgepole pine forests of eastern Washington, Montana, Idaho, Wyoming, Colorado, and New Mexico are being decimated by the mountain pine beetle (formerly they bred one generation every two years; now they breed two generations in one year).

He fourth largest ecosystem in western America is pinyon pine and juniper woodlands. The engraver beetle that attacked them formerly bred one to two generations in a year but now are breeding three to five. The result is 90 percent mortality of all pinyon pines in New Mexico.

Why is this happening? So far as tree scientists can understand, warmer winter temperatures have over the past five years enabled the beetle and leaf eating insect numbers to go from millions to billions.

Are all western American forests now doomed? No. Will they recover? Yes. It will take some time. Eventually insect populations will crash and trees – the most successful form of vegetation – will recolonize the land.

In the meantime, the dead standing trees near cities and towns must be removed manually as they will be a source of dried kindling for potential monster firestorms in 2004 and 2005. Manual removal of millions of dead beetle-killed trees may require unusual measures like using prison labor. But, removing trees may cost a fraction of what might be needed to fight monster firestorms fueled by millions of dead trees.

An ounce of prevention – getting dead trees of the land – is indeed worth a pound of cure – fighting monster firestorms.

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