

GUEST VIEW

Acknowledge limits of forest knowledge

- GEORGE WUERTHNER
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A researcher in California is collecting seeds of sugar pine that appear to have resistance to bark beetles. Her goal is to capture and propagate trees that can withstand beetle attacks. According to the article, past logging of sugar pine has dramatically reduced the genetic diversity of the sugar pine population.

Loss of genetic diversity is one consequence of logging that few public agencies acknowledge.

For example, on a recent field trip I attended, the foresters in the group told us they were going to log some fir trees that had "root rot" as well as adjacent fir trees that "might" get the pathogen. No one in our group questioned the starting assumption that it was desirable to eliminate root rot or even the trees that might have resistance to the disease. When I asked the lead forester why he felt it was necessary to log the trees, he responded by saying the trees were likely to die.

So I inquired further: "So, you want to kill the trees by logging, so they don't die from root rot?"

I followed up with, “What is the ecological role of root rot in the forest ecosystem?” I got no response, just blank stares. No one had even considered that root rot might play any critical role in forests.

I do not know the role of root rot either, but I don’t assume that removing trees with root rot “improves” the forest ecosystem. At the very least, the dead trees would continue to store carbon, provide homes to countless forest animals and plants and functional components of the forest landscape.

The irony is that most of the current logging projects on public lands are justified in the name of “forest health” and “resilience.” Yet logging, past and present, is removing the genetically resistant trees from the forest.

One study sampled the genetic diversity of forest plots before thinning. Immediately after the logging project, the genetic diversity of trees in the plots was re-examined. The researchers found that approximately half of the natural genetic diversity had been removed by logging.

Importantly it was the rare genetic alleles that were eliminated. Maybe one tree in a hundred might have genetic resistance to, say, drought. Still, when you remove 50% of the trees from a stand, you are likely to eliminate that one tree that might provide survivors to repopulate the forest stand under adverse conditions.

Many ecologists adhere to the "precautionary principle," which acknowledges our collective ignorance about how ecological systems work. The precautionary principle warns us to restrict our manipulations to as small an area as possible, and at the same time, create extensive conservation reserves where human intervention is minimal.

Abundant evidence exists to suggest that periodic mortality — even significant losses — from drought, disease, beetles, fire and other evolutionary processes creates “resilience” and “healthy forests.”

It's time for our public agencies to acknowledge that the industrial forestry paradigm is a threat to our forest ecosystems and to act with humility in the face of our collective ignorance.

George Wuerthner is an ecologist and has published 38 books on natural history and environmental issues.