

Digging Deep with Cynthia Brian

The language of trees

By Cynthia Brian

"The ax forgets, the tree remembers." African Proverb



A flowering cherry thrives next to California redwoods and golden poppies.

Photo Cynthia Brian

Do trees have feelings? Do they communicate with one another? As I watch the leaves unfurl and the blossoms bursting on the trees in my landscape, I have a sense that my trees are talking and communing with one another. With the celebration of Earth Day on the horizon, this was an opportune moment to research the language of trees.

At the insistence of his wife, German forester Peter Wohleben authored an accidental bestseller, "The

Hidden Life of Trees: What They Feel, How They Communicate." The two of them live in a cabin in the remote village of Hummel where Peter manages a nature reserve. He has become a spokesman of sorts for protecting and respecting the rights of trees.

Although trees don't form words as humans do, they do communicate, and are more alert, sophisticated, and social than we expected. Trees form alliances with other trees of both their own species and others

to survive and thrive. They connect via underground fungal mycorrhizal networks, a symbiotic relationship between tree roots and fungi. As they scavenge for nitrogen, phosphorus, and other nutrients, the fungi consume 30 percent of the sugar photosynthesized from sunlight then feed the trees. This fungal internet of thin threads known as mycelium can also transport toxins to keep competing plants from establishing nearby. Eucalyptus and sycamore commonly exhibit this behavior. Biologists have termed fungi-to-tree communication the "wood wide web," showcasing how interconnected and interdependent nature is.

Using pheromones and scent signals, trees also talk through the air. Research was done several years ago with acacias on the savannas of Africa. When giraffes began chewing on the leaves of the thorny acacia, the tree sensed the wound sending a distress signal in the form of ethylene gas to neighboring acacias. The trees receiving the message of imminent danger pumped quantities of tannins into their leaves, which can kill an herbivore.

Trees differentiate between an animal attack and a human cutting a limb. When a branch breaks or is sawed off, the tree sends chemicals to heal the wound. And trees remember.

Trees also have a sense of smell and taste. When an elm or pine is attacked by leaf-eating caterpillars, the affected trees detect the saliva. Pheromones are released to attract parasitic wasps. The wasps lay eggs inside the caterpillars, and the wasp larvae eat the caterpillars from the inside out.

Dr. Suzanne Simard, a forest ecologist with the University of British Columbia is renowned for her extensive scientific research into mycorrhizal networks and "hub trees" or "mother trees" as she prefers to call the biggest, oldest forest trees. Mother trees are not necessarily female but they do have the most fungal connections to nurture and support the saplings. Their deep roots suck up water and send it to fellow trees along with other nutrients and distress warnings. Her lab studies found that defense signals traveled between a diversity of trees within six hours. Not all scientists agree with Simard and Wohleben that trees are sentient beings. ... continued on page D16