

In a Changing Climate, a Lifetime of Observations can Inform Research

By Don Motanic

For 20 years, Darren McCrea, a Colville tribal member, has worked on the Spokane Reservation's forest as a technician and logger. Yet he's been in the woods even longer. Darren grew up in the western region of the Spokane Indian Reservation near his family's Indian allotment. [Individual Indian allotments of land were assigned to some tribal members after the Treaty era ended in 1887 under the Dawes Act. Allotments of land continued to be assigned to some tribal members between 1887-1934, until the policy ended with the Indian Reorganization Act. Today there are thousands of allotments throughout the United States on and near Indian reservations.]

Now, an adult, he is an allottee owner and manages his family's 78-acre allotment. Over the years, Darren has secured funding from the Spokane Tribe to thin the stand of

ponderosa pine to create a resilient healthy stand. By spending all his life in these forests, Darren has observed a number of changes to the ponderosa pine trees on both his family's allotted land and in forests throughout the Spokane area that he attributes to increasing levels of atmospheric CO₂.

One significant change—the trees are growing too fast. Their tap roots are growing fast and deep, but the supporting root system can't keep up. With little effort, Darren can easily pull a four-foot tree out of the ground. He can also easily break what are usually flexible green limbs on a mature pine. Additionally, the trees have limbs that are curling up and needles are deforming into needle clusters that look like a bottle cleaning brush.

Several published research articles have confirmed Darren's observations that CO₂ levels could be affecting the growth patterns of a tree's leaves and

Darren Dandelions and Trees Climate Change

Nearly three years ago, Darren created a video about his observations and posted it on YouTube to help spread the word about his observations. The video is available at <https://www.youtube.com/watch?v=2sS4YoODfH8>.

Another video shows the ease in which he can break young saplings—
<https://www.youtube.com/watch?v=v4e4zOB2AFY>.

needles. One such article is "Leaf Trait Acclimation Amplifies Simulated Climate Warming in Response to Elevated Carbon Dioxide," which was published in 2018 in *Global Biochemical Cycles*. [The article is open access and is available at <https://tinyurl.com/2b7e3yfy>.] Lead author Marlies Kovenock writes, "If this single trait—leaf thickness—in high carbon dioxide levels has such a significant impact on the course of future climate change, we believe that global climate models should take other aspects of plant physiology and plant behavior into account when trying to forecast what the climate will look like later this century."

This statement appears to confirm Darren's observation and that further research needs to be conducted to fully understand the effects of increased CO₂ levels on the forest plants, animals, soil, and water. I plan on creating a way for their paths to meet and share research with his traditional knowledge of not only trees but traditional tribal foods. *WF*

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PHOTOS COURTESY OF DON MOTANIC

When Darren McCrea, a Colville tribal member, noticed that the ponderosa pine growing on his family's allotment were exhibiting unusual growth patterns, he suspected the result was climate changes. Recently published research has confirmed his suspicion.