

Fall aspen tree colors setting up for prime time, says CU-Boulder prof

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Aspen leaves float in a pond under some changing Aspen trees. Credit: Casey A. Cass/University of Colorado

The gradual fall cooling on Colorado's Front Range this September is helping to set up what could well be a prime-time show of gold, yellow

and red leaves in the region's aspen forests, according to a University of Colorado Boulder plant ecologist.

"In general the [aspen](#) look very healthy this year," said CU-Boulder Professor Michael Grant of the ecology and evolutionary biology department. "If the cooling pattern going into the fall remains gradual, I expect that we will have a very good color season."

So where are the dazzling red, yellow and gold hues in the weeks running up to the annual color show? They are hiding in plain sight, said Grant, who also is CU-Boulder's vice provost and associate vice chancellor for undergraduate education.

Each fall, aspens retract [chlorophyll molecules](#) from their leaves and sequester them in their stems and roots, to be shipped back into the branches and leaves the following spring, he said. The chlorophyll molecules, which give the leaves their green hue, absorb sunlight to produce most of the energy for deciduous trees like aspens.

"When the green pigment disappears from these leaves, we see other pigments that have been there all along, like the reds and the yellows," said Grant. "They also are light-gathering pigments, but we haven't seen them because they have been masked by chlorophyll. Think of the changing aspen color as erasing the green from the leaves."

Grant said the higher in elevation the aspen are, the earlier in fall they change colors. Along Colorado's Front Range, the third week in September is often the peak period to view aspens, although temperature and precipitation changes can alter this pattern.

Some of the best places for Denver-Boulder aspen enthusiasts to visit, according to Grant, are the Peak-to-Peak Highway between Central City and Estes Park, the Brainard Lake area in the Indian Peaks Wilderness

west of Boulder and Golden Gate Canyon State Park west of Golden. "Also, a drive from here to Aspen is always beautiful this time of year," said Grant.

Grant said if warming temperatures that are forecast for the Colorado climate in the coming decades continue, aspens at lower elevations probably won't do as well. But those at higher elevations could even expand their ranges a bit, he said.

Most aspens in the West reproduce asexually by cloning – sending out underground roots that then send up nearby shoots, which develop into aspen trees, he said. "Typically, a clone will have one color, while nearby clones, which are genetically different, may exhibit different hues and timing of changes in the fall."

In the 1990s, Grant and CU-Boulder professors Jeffrey Mitton and Yan Linhart wrote a paper published in *Nature* magazine asserting that a particular aspen clone in Utah that the team later dubbed Pando, for the Latin word "I spread," deserved consideration for being the world's largest living organism. Pando, which consists of nearly 50,000 tree trunks covering roughly 106 acres, is located in central Utah about an hour drive from the town of Richfield.

Grant and his CU-Boulder colleagues calculated the Utah aspen clone weighed roughly 13 million pounds, or 6,500 tons, which would make it the most massive organism in the world.

But Grant noted there is humungous fungus in the Northwest that is larger in area but which is not nearly as heavy as Pando. The fungus, which resides in Oregon's Blue Mountains and is a relative of the white mushroom, covers nearly 2,400 acres – the equivalent of roughly 1,660 football fields.

Provided by University of Colorado at Boulder

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