DENVER BOTANIC GARDENS

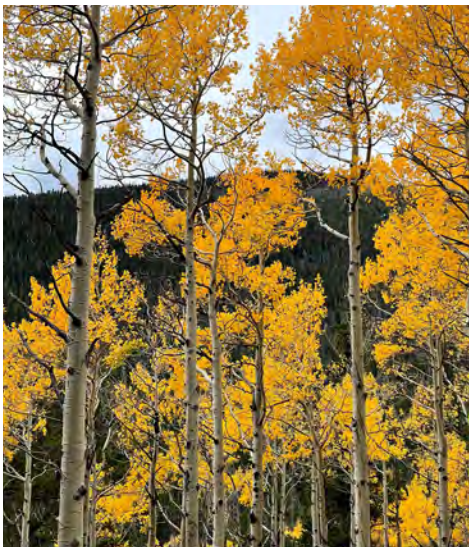
EcoQuest

October 2024

October EcoQuest: Leaf Peeping for Science

October has arrived and with it the leaves are beginning to change their colors in the Front Range. Why does this happen and what determines the colors we see?

The green in leaves is a result of chlorophyll, a pigment that allows plants to make their own energy by converting sunlight into sugars through photosynthesis. Deciduous trees prefer to make the bulk of their sugars in the warmer seasons and store it for the winter, so they drop their leaves to prevent damage from snowfall and freezing temperatures. The shorter fall days reduce direct sunlight, causing chlorophyll to break down, unveiling hidden yellow and orange pigments in the leaves. Rich red hues in trees such as red maples or sumac arise from a different process. To drop leaves, a layer of cells is formed between the leaf and branch. When this happens, sugars become trapped in the leaves and produce anthocyanins, the source of deep auburn shades.



Trembling aspen, *(Populus tremuloides)*, nmwmson, some rights reserved, CC BY-NC.

Here in Colorado, when we think of fall colors we typically think of the golden hues of the iconic quaking aspen. The scientific name, *Populus tremuloides*, reflects the "trembling" characteristic of the leaves in the wind. Aspen is in the Salicaceae family, which was named after the chemical salicin found in the bark of aspen and its relatives. Salicin is converted by the body into salicylic acid—a major ingredient of aspirin. Many species in this family, such as willows, have been cherished for their medicinal properties for millennia.

In addition to their medicinal significance, aspen are also ecologically important. They serve as keystone species that support biodiverse forest habitats. They are also considered an indicator species for environmental health and can be sensitive to changes in soil conditions and climate. Unfortunately, aspen have been declining in North America for several decades. Consequently, monitoring their locations and health offers valuable insights into the effects of climate change and land management practices.

This October let's turn our leaf peeping into a scientific adventure. As you marvel at the changing colors of our local aspen trees, consider making iNaturalist observations of your sightings. By documenting these moments, you're not only capturing the beauty of nature but also contributing to valuable research on environmental health and climate change effects.

What is an EcoQuest?

EcoQuests, part of the Denver EcoFlora project, challenge citizens to become citizen scientists and observe, study and conserve the native plants of the City via iNaturalist, an easy-to-use mobile app.

How Do I Get Started?

1. Download the iNaturalist app or register online at iNaturalist.org.
2. Take photos of the plants in bloom that you find on your daily neighborhood walk. It is ok if they are weeds! But avoid taking photos of cultivated plants in gardens or in your home.
3. If you are concerned about revealing the location of sensitive organisms or observations at your own house, you can hide the exact location from the public by changing the "geoprivacy" of the observation to "obscured."
4. Post your findings on iNaturalist via the app.
5. Your observations will automatically be added to the Denver EcoFlora Project.
6. You can add an identification to your photo when you post your findings on iNaturalist, or leave it blank for others to identify.

What is the Goal?

The EcoFlora project is designed to meaningfully connect citizens with biodiversity, and to assemble novel observations and data on the metro area's flora to better inform policy decisions and conservation strategies.

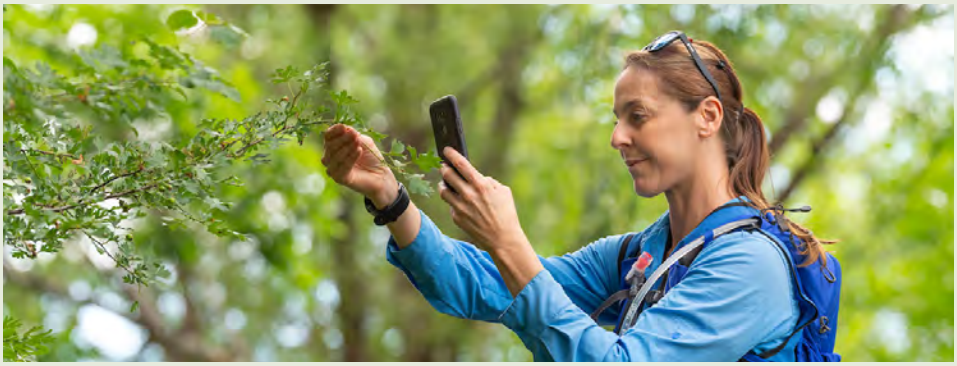


Photo by Scott Dressel-Martin

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