The Chemistry of Fall Colors

Chloro-Filled

Some plants, called evergreens, have special adaptations in their leaves that allow them to keep their chlorophyll and remain green all year. For example, pine trees have long, thin "needle" leaves that are filled with a resin that resists freezing and covered with a wax that helps prevent water loss. Since evergreens can protect their chlorophyll from winter conditions, they do not need to shed their needles every fall. How many different types of evergreens can you find?

Hidden Hues

As chlorophyll disappears, the pigments responsible for making leaves turn yellow (xanthophyll) or orange (carotene) are revealed. Because these pigments were already in the leaf and were just masked by the darker green chlorophyll, the yellow and orange hues of fall remain fairly constant from year to year. See how many different-shaped yellow and orange leaves you can find during your hike today.

Sugary Saps React

When days shorten, a barrier (abscission layer) forms between the leaf stem and branch, trapping sugars in the leaf. These sugars react with bright sunlight producing a sappy-sugary substance called anthocyanin. Anthocyanins are responsible for the brilliant red colors we see every fall. The intensity of the fall's red colors varies dramatically depending on weather. The most vibrant autumn reds are produced when dry, sunny days are followed by cool, dry nights.

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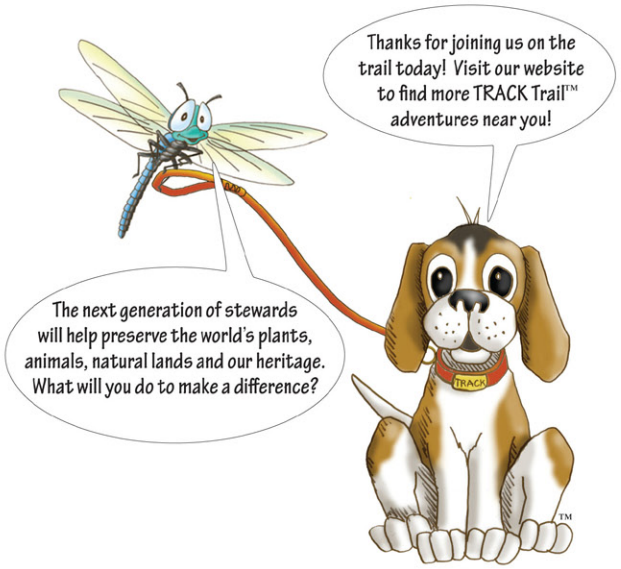

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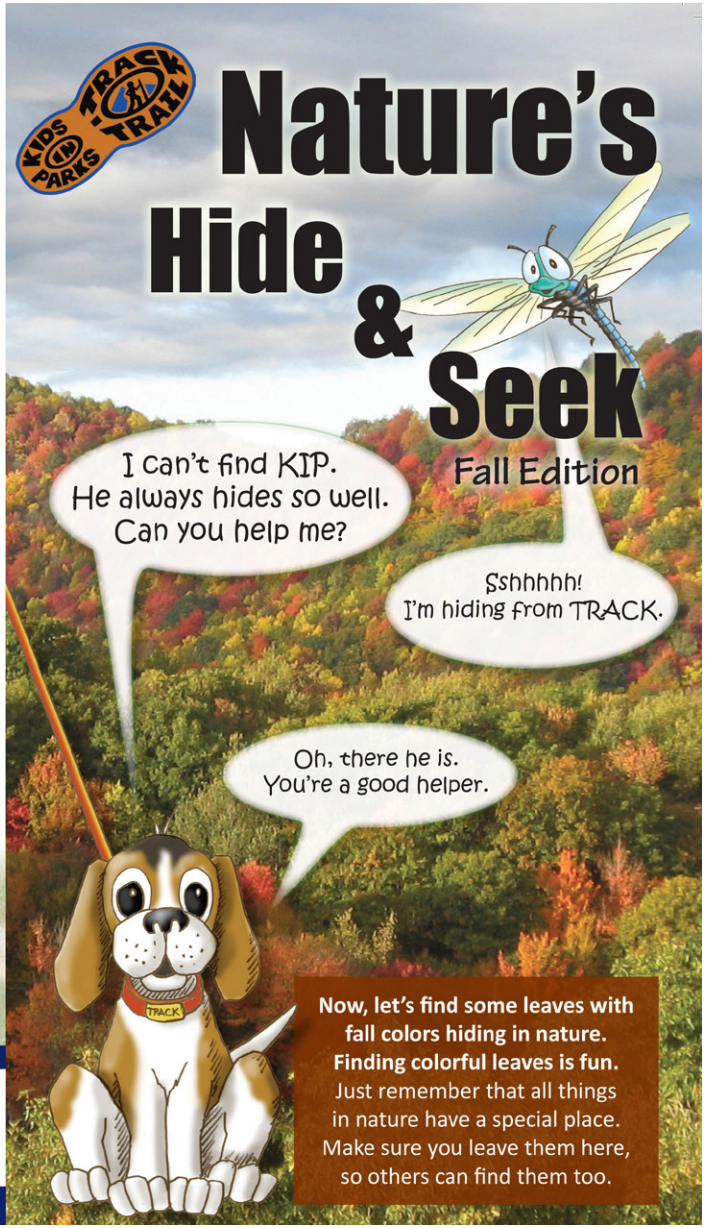
Nature's Hide & Seek

Fall Edition



Now, let's find some leaves with fall colors hiding in nature. Finding colorful leaves is fun. Just remember that all things in nature have a special place. Make sure you leave them here, so others can find them too.

Nature's Painted Landscape

During your hike today, see how many of these colorful leaves you can find.

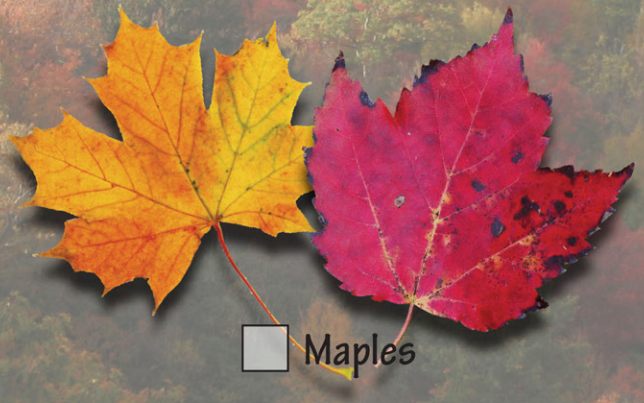
☐ American Holly

☐ Tulip Poplar

☐ Sassafras

☐ Hickory

☐ Oaks



☐ Maples

☐ Flowering Dogwood

☐ American Beech